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THE

# PRINCIPLES AND PRACTICE

OF

# OBSTETRIC MEDICINE.

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THE

# PRINCIPLES AND PRACTICE

OF

# OBSTETRIC MEDICINE,

IN A SERIES OF SYSTEMATIC

## DISSERTATIONS ON MIDWIFERY,

AND ON THE

## DISEASES OF WOMEN AND CHILDREN.

ILLUSTRATED BY NUMEROUS PLATES.

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BY

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# THE PATHOLOGY

## OF THE UTERUS AND ITS APPENDAGES—CONTINUED.

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## CHAPTER IX.

### OF MALIGNANT DISEASES OF THE UTERUS.

Of Cancer.—Carcinoma.—The disease which the author proposes here to discuss, commences with an indolent induration of the part which is eventually to become the seat and subject of the malady. The specific induration here intended, is expressed by the term scirrhus: many writers having considered scirrhus as the first stage of cancer. The term scirrhus, Σκιρρος, is of Greek origin, signifying primarily a piece of marble, FRAGMENTUM MARMORIS.

According to some of the older writers, a scirrhus should have the following properties:—1st, those of hardness and renitency, resisting the touch; 2nd, indolence, or insensibility even to pressure; 3rd, the absence of a tendency, during the earlier stage of its development, to any change of colour of the affected part; 4th, a subsequent tendency to produce a livid hue of the part diseased; 5th, its slow progress by very gradual congestion; and finally, the absence of heat of the part during the earlier period of the congestive state, and until the indolent stage of the disease shall have been followed by the painful one.

Scirrhous tumours of readily accessible parts most frequently commence with minute hardnesses, often not larger than pin-heads, unless occasioned by external injuries; when the tumour, upon being first felt, is found of the size of a nutmeg, or even of a walnut; whilst scirrhous indurations of inaccessible tissues, as of the uterus, are seldom discovered until they become much more diffused in their extent; when also for the most part they first become objects of professional attention. The boundaries of scirrhous tumours are sometimes observed to be surrounded with œdema, or inflammation, even when the tumours themselves are in a state of perfect indolence; and then the epithets œdematous and phlegmonic have been added by precise writers to distinguish these states; whereas that of simple has been employed when the disease presented an exclusiveness of locality unaccompanied by any surrounding inflammatory or œdematous action. The volume of a scirrhous tumour is often easily distinguished, especially in the breast; and then it is said to be circumscribed. When, on the other hand, it is deeply seated, its exact boundary is sometimes not to be ascertained in the same manner; and in such cases it is said not to be circumscribed.

Of some of the Principal Opinions which have been entertained of the Nature and Proximate Cause of Cancer.—Hippocrates considered cancer so certainly fatal in its issue, that he does not appear to have thought it worth his while to examine into its causes. Aphorism. sect. vi. 38. A similar remark applies to what Celsus has left on the same subject. Lib. v. cap. 28. But Galen's opinion, in his Commentaries on Hippocrates, is, that the cause of cancer is black bile, and that at its commencement, when such bile had not become inspissated, it admitted of being cured by purgatives. Galen ad Glau. lib. ii. tom. 3. p. 1391. Paulus Ægineta expressly informs us, that cancer is so exceedingly obstinate in its nature, by reason of the grossness of the humour producing it, that it can neither be repelled nor discussed by any medicine, not even by purgatives. The same author states the opinion of his day to have been, that every part of the body was liable to this disease; but more particularly the female mamma, as from its loose and spongy nature it imbibed more readily the matter of atrabilis. The malady, he observes, had received its designation of cancer from the distribution of its large veins, which extend themselves in every direction like the claws of a crab; or as others believed, from the force and tenacity of purchase of the same fish, after having once fixed on its prey. Paul. Æginet. lib. iv. cap. 26. On these principles of the humoral pathology, cancer was assumed to be the effect of grossness and feculency of the blood, in consequence of its being too much charged with atrabilis, pituita, or some other fancied element of the humoral system. Ambrose Paré's works, translated by Johnston, p. 219. 1649. Roderic a Castro, Lusitan. lib. 1. pt. 2. p. 145. Even our countryman, Wiseman, whose practical observations are at this day valuable, fell into similar conceits on the subject of cancer; but not without interspersing amongst them peculiar opinions of his own.

About this time the humoral pathology of Galen and his disciples began to be subverted by the chemical doctrines of Paracelsus. That remarkable author attributed cancer to the morbid action of acids and alkalies in the blood. A full account of the numerous theories of cancer which were constructed in accordance with these doctrines may be found in Hildanus, cent. iii. p. 268.

Van Helmont ascribed to cancer in common with some other diseases an individuality of life. He compared its origin and progress to those of a bean, as germinating from a seed of about the size of a bean, and expanding by a gradual propagation of its roots in all directions. Van Helmont de Ideis Morbosis, p. 546.

Gendron discarded the chemical opinion of Paracelsus, and grounded his conception of the origin of cancer on the structure of the affected parts, which he accurately examined. He supposed cancer to be an exclusive result of a morbid conversion of the glands, nerves, lymphatic vessels, etc., into a hard uniform indissoluble substance; that effect being produced by the cessation of the infiltration of the part: and although the germ of the disease thus deposited might consist of a very small induration, yet the obstruction gradually extending might be naturally expected to augment the volume of the diseased mass. Inquiries into the Nature and Cure of Cancers, by M. Desh. Gendron, p. 6—26.

Fig 1.

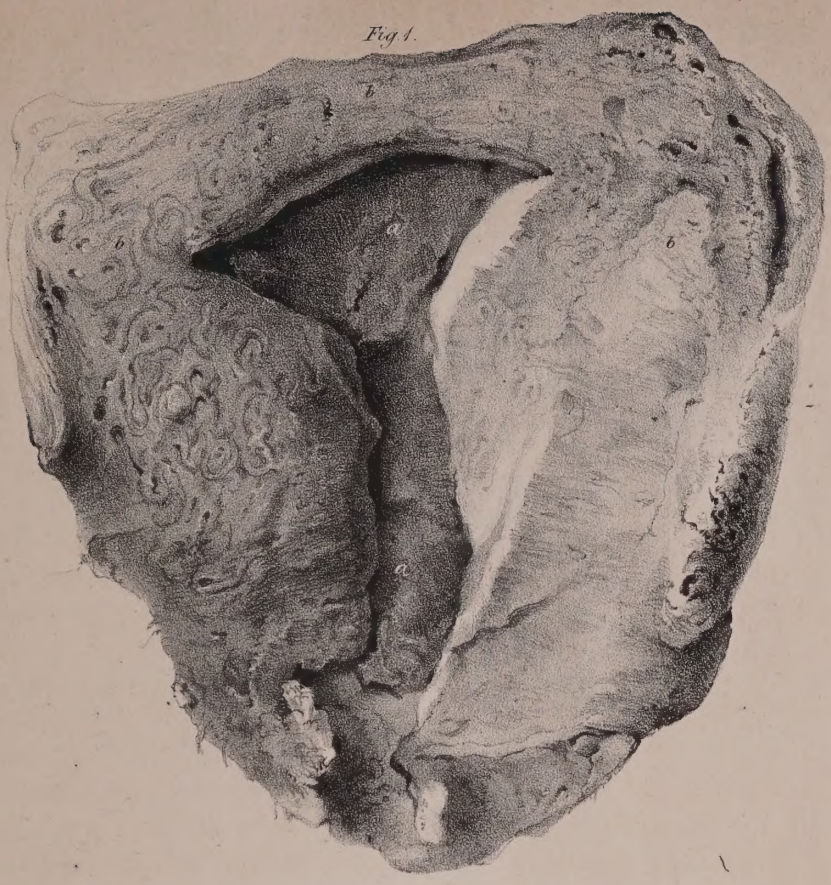


Fig 2.

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About the same period, viz. 1670, M. Helvetius published his Observations, in which he assigns the source of cancer merely to a small drop of humour EXTRAVASATED INTO A GLAND BY THE EFFECT OF SOME EXTERNAL VIOLENCE; its growth being to be attributed to the frequent addition of a similar humour coagulating with the first. But to account for the succeeding pain and ulceration, he was obliged to adopt the customary hypotheses of leaven, effervescence, and sharp humours. Carmichael's Essay, p. 232.

Boerhaave supposes cancer to be an effect of excitement of vessels surrounding a scirrhus; the latter being a presumed result of inspissation or coagulation of juices in a gland.

Heister assigns the same origin both to scirrhus and cancer, viz., inspissation and coagulation of the juices.

Le Dran imputes the same effect to obstruction of one or more glands, which he says produces a scirrhous tumour only, so long as the fluids remain unaltered; but as these become vitiated the tumour degenerates into a cancer.

Fearon attributes this disease to a simple enlargement or induration of some glandular part, at first moveable, and free from pain, without any inequality, apparent inflammation, or change of colour, in the integuments. Fearon's Treatise on Cancers, p. 16.

Dr. Darwin's opinion on this subject is both ingenious and peculiar. It will be best understood if communicated to the reader in the author's own words. "After the absorbent veins of a gland cease to perform their office, if the secerning arteries continue to act some time longer, the fluids are pushed forward and stagnate in the receptacles or capillary vessels of the gland, a hard tumour gradually succeeds, which continues like a lifeless mass, till, from some accident, it acquires sensibility, and produces cancer or suppurates." This theory of course presumes the glandular system to be primarily the seat of the disease.

An hypothesis which assigns to cancer a life, independent of the part in which it is situated, has been proposed by several writers on the subject; but with great diversity of opinion as to the mode or form in which it enjoys this separate existence. In the Bibliotheca Anatomica published in the year 1600, we are told that many were of opinion that it resided in a multitude of small worms, which in ulcerated cancer could be easily discovered by the microscope. Justamond, in his treatise on this disease, supposes that it is produced by insects; their germina being imbibed from the air by lymphatic vessels; that while they remain in an inanimate state, the scirrhous tumour is free from uneasiness and pain; but that accidental violence, by which they are quickly brought to life, has the effect of inducing the ulcerated state of the disease. He was led to this conjecture by observing that the absorbents were most numerous in those situations where cancer usually occurs, by which structure the germina of insects floating in the air would be more readily absorbed; that the pain peculiar to cancer favours the notion of insects corroding the part; and

that acids would destroy the animalcula of cancer, as sulphur poisons those which Lewenhoeck proves to be the cause of itch; every insect having its peculiar bane. He further observes that he is not singular in his idea of cancer; for that, in one of the volumes of tracts collected by Mr. Bell, he found it introduced as a received opinion in various parts of the continent. In his work upon tropical climates it is stated by Dr. Mosely, that at the Bay of Honduras a true cancer, called the bay sore, is endemic, and ascribed by the Indians to the effect of a large fly depositing its eggs in the flesh of the part afterwards to become affected by it. Such were the theories on the generation of carcinomatous disease, anteriorly to the date of the late Dr. Joseph Adams's Observations on the Cancerous Breast. London, 1801.

According to Dr. Adams's opinion, as maintained in the essay in question, scirrhus or the early stage of carcinoma is composed of certain cysts. These cysts, otherwise called hydatids, are said to be subject to certain peculiarities in their appearance and progress. Of these characteristic peculiarities, one is that their increase is not towards their surface like the ascent of matter in a common abscess, but in all directions; and another is, that they have an extraordinary disposition to fungate even before the skin is broken, and in a still greater degree after it has become an open sore. Adopting his description of the simple human hydatid from Dr. John Hunter, the ingenious essayist on that and other subjects in the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, London, 1793, he founds upon it the following application of the fact to the purposes of his own particular theory. The man whose case is related by Dr. John Hunter was opened thirty hours after death. As he died somewhat suddenly, it is probable that at the time in question absolute and universal death had taken place. If so, the case furnishes no inconsiderable proof of the separate vitality of the hydatids; for although it does not appear that Dr. Hunter made the experiment in warm water, yet he found that when the hydatids were opened, they retained a strong contractile force, so as to roll themselves up in part. Now if this contractile force was not the effect of elasticity, it is a sufficient proof of the separate life of these hydatids. "You will therefore require no more of me," observes Dr. Adams, "than to prove the existence of the same properties unconnected with elasticity in the fatty part of the cancerous breast. Immediately after the operation of extirpation of that organ, take the amputated part of it and cut it in a transverse direction, or indeed in any direction, and wherever you discover this fatty appearance, you will see the surface at first smooth under your knife. In an instant after, you will find a papillary appearance all over the yellow-green surface. Each of these papillæ you will find to be part of the contents of a capsule, the contraction of which has produced this conical figure. If the amputated part shall have been long exposed to the cold, or thrown into water and left there for several hours, a section of it no longer exhibits this appearance, nor is it possible in this stage to distinguish at first sight what I call carcinomatous

hydatids from common fat, and the contractile power of the enclosing tunics could only arise from life, and the degree of heat with which that life was attended. But although the colour and papillary appearance no longer remain, it will not be difficult to distinguish this fact from the common adipose cellular substance. By an accurate examination of the surface, you will detect the cells or loculamenta in which the fat is deposited; and with a blunt instrument you may easily dig out the fat, free from all fibres. The containing cell is usually so strong that there is little danger of breaking it; and when thus emptied, it retains its figure, being supported all round by other cells, or by the fungus. Now, if carcinomata pass through the same stages as Dr. Hunter has remarked of the common or lymphatic hydatid, is it not probable that on the death of any of them suppuration will follow, and that this suppuration may expose the living hydatids in such a manner that many of them may die from not being surrounded by living animal matter? To prevent this, I conceive a fungus is formed, which incloses individuals of clusters of them in separate compartments, so that the death of one set shall produce no effect on the rest. As far as my observation extends, this fungus grows in every direction where it is necessary to preserve the hydatids. When a cluster of hydatids dies, the fungus between it and the surface ulcerates or sloughs slowly, till the compartment containing them is exposed. By this time, if the progress has been very slow, all the tunics of the hydatids are detached, and the surface being clean, will make an attempt at healing. If no dead hydatids are in the neighbourhood, it will often for a time scab, or even skin over. But if, when the cavity is exposed, some of the tunics of the hydatids retain their attachments, the attempt at healing will only produce an exuberance of fungus with retorted edges. This will continue till all the tunics or fragments of them are detached; after which, if no new impediment arises, the edges will take a different direction, and the part will therefore for a time heal." Adams's Observations on the Cancerous Breast, letter IV. to Dr. Baillie, p. 37.

A somewhat remarkable theory of cancer which we must not omit to notice, is that of Mr. Carmichael's. That gentleman coincides in opinion with Dr. Adams as to the general fact of the independent life of cancer; but his sentiments, as he himself states, are somewhat different concerning the part in which that life is resident. "In reference to Dr. Adams's theory," observes Mr. Carmichael, "I have already given some of my reasons for not conceiving the fatty substance of a cancerous breast, with its containing cells, to be endowed with a separate existence, and I shall now offer those which induce me to attribute it to the substance resembling cartilage, with its annexed bands or roots, which, from its being always present in cancerous tumours in every situation, I conceive to be the essential parts of carcinoma." After quoting the authorities of Baillie and Abernethy in support of this part of his statement, he appeals to the experienced testimony of M. Gendron, from whom he quotes the following expressive passage:—"that during eight

years' dissection of cancers, he always found in those of the breast, womb, nose, eyes, ears, and skin, a substance of an uniform nature, RESEMBLING TENDER HORN; but that this substance, which is essentially the very substance itself, was of a different conformation, according to the place where the cancer was situated." M. Gendron on Cancer, pp. 27 and 28.

"That an apparently irregular and unorganized mass should possess a vital independent principle," observes Mr. Carmichael, "is a position not easily digested by any understanding; yet prejudice is daily losing ground as our experience increases; and on close inspection we find that the substance of carcinoma, although irregular, is not that confused indistinct assemblage of various parts of which it is generally thought to be composed." In the female breast and elsewhere, Mr. Abernethy observes, that "carcinoma commences in a small spot, and extends from thence in all directions like rays from a centre; and that firm white bands, like thickened and compact cellular substance, are seen to extend themselves from the original tumour, amidst the fat in which it is occasionally embedded." Abernethy's Surgical Observations, p. 68. "It is unnecessary to adduce any further authority," adds Mr. Carmichael, "concerning the structure of carcinoma, or its commencement and mode of augmentation: but in the many opportunities I have had of examining this disease, the appearances exactly coincided with those described by Mr. Abernethy. Those white bands, extending themselves into the surrounding parts, which every operator is so careful to extirpate, without leaving the smallest portion, may be easily traced through the fat to their origin, from the primary tumour whence their dimensions gradually taper like the roots of a tree. If the fat be entirely taken away, nothing will remain but the original hard and peculiar substance produced in those bands or roots, which seem to extend themselves in such directions as would appear to oppose the least resistance to them, avoiding the pectoral muscle, although they pierce the fatty substance of the breast, at a greater distance from the original. In fine, it appears that carcinoma is composed alone of a peculiar substance, apparently of a gelatinous origin, but unlike any thing in the body, commencing in a point, and gradually increasing, most frequently forming cavities in its structure, and shooting out roots into the neighbouring parts; which though necessarily affected by the proximity of such extraneous mass, are not to be considered essential to its formation, but rather as a nidus contributory to its production and increase." Carmichael's Essay, p. 243. It appears to the author that Mr. Carmichael has not sufficiently clearly established the fact of a direct connexion, nor especially the kind of connexion which he supposes to exist between THE SUBSTANCE RESEMBLING CARTILAGE, INCLUDING ITS ANNEXED BANDS OR ROOTS, WHICH TOGETHER HE CONCEIVES TO BE THE ESSENTIAL PARTS OF CARCINOMA, and the previous existence of hydatids in the part or organ subsequently to become carcinomated. That task indeed was left to be better performed by Drs. Baron and Hodgkin. The former of these gentlemen has very satisfactorily

Pl. XXII. C.

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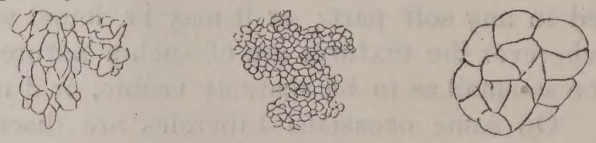
proved the coexistence of hydatids and tuberculous diseases in different parts of the same subject, and not unfrequently occupying immediately contiguous portions of the same organ; and from this fact he has inferred their identity, and therefore of course their community of origin, and on this simple basis has he founded his theory of tuberculous diseases, as also of all TUMOURS not referable to disordered actions of the sanguiferous system. But let him develop his views in his own words. "We are now prepared to apply the facts which have been already collected to explain the formation of certain tumours. To prevent misconception respecting the meaning which I affix to the terms tubercle and tumour, it is proper to observe, that I would employ the words tubercle to denote those disorganizations that are composed of one cyst, whatever may be its magnitude or the nature of its contents; and that by tumour I would understand those morbid structures that appear to be composed of more than one tubercle, after the manner which I am now to attempt to explain. I wish the reader to remember that I do not bring forward this distinction as applicable to all diseases of this class, although it may afterwards be found to be so. But at present it will be convenient for the purposes of illustration; and I wish it to be considered merely as an artificial arrangement, intended to prevent confusion in the subsequent detail. It is probable that all tubercles, wherever situated, and of whatever substance composed, were at their commencement small vesicular bodies, with fluid contents. It is impossible to say how minute they might have been at their origin, nor how large they may grow before their transformations begin: nor are we acquainted with the circumstances which occasion such transformations; but that they do take place, has, I conceive, been demonstrated beyond the possibility of doubt. It is not known how the changes in hydatids are effected; but to these changes certain tubercles owe their existence; and on the size and relative position and structure of the tubercles, which are so formed, depend the characters of many of the most formidable disorganizations to which the human body is exposed. Let us endeavour to give further illustrations of these most important facts. A single hydatid when it is transformed, will give rise to one tubercle. It may be pendulous or imbedded in any soft part; or it may be found within the layers of membranes, and wherever the textures are of such a nature as to admit of its growth. It may be so small as to be scarcely visible, or it may acquire a very great magnitude. On some occasions tubercles are disengaged from their attachments, and found loose within the cavities. It is probably in this way that the bodies which are sometimes discovered within the capsular ligaments of the joints are formed. Single tubercles are often seen in a viscus, while all the rest of the organ is free from disease, and its functions are performed in an uninterrupted manner. But it is evident that the same state of the system, whatever that may be, which calls one tubercle into existence may generate an indefinite number. They may be diffused through the whole of a viscus, leaving nothing of its original texture; or they may occupy a portion of it, or extend to the con-

tiguous parts, and involve them in the same form of disease. Hydatids occasionally grow in clusters, and hang within the cavities. When the transmutations are effected, the morbid appearances of course must in some degree correspond with the original distribution of the parts. I have seen tubercles attached in this form to the choröid plexuses, to the valves of the heart, to the fimbriated extremities of the fallopian tubes, and to the omentum, and the convolutions of the intestines. In the latter instance they were very minute, the largest not being bigger than the head of a pin, and their number defied all calculation. They had the appearance of fringes. Other varieties in the arrangement of the elementary parts of morbid growths, will of course cause corresponding varieties in their appearance. Thus, when hydatids are enclosed, the one within the other, and are transmuted into solid substances, a section of such bodies will exhibit a series of concentric laminæ. An example of this kind was found in the case of Wingate, amid another variety of the same disease.

Sometimes small hydatids grow from the outer or INNER surface of large ones, or float within them. I have seen from a source of this kind, the uterus and its appendages converted into an enormous misshapen mass; tubercles of the size of the fist growing from it, while these again were surmounted by smaller ones in many gradations. Some had glairy contents, others were in a state of scirrhosity, and others were but little changed, having thin delicate cysts, and containing a transparent fluid.

But the most important variety of all, perhaps, is that when tubercles, originally distinct from each other, approximate as they increase in size, ultimately unite, and form tumours which have received different designations, according to the predominant character of their contents and internal structure. It was chiefly to elucidate this part of the subject that I made the distinction between the words tumour and tubercle that is to be met with at the commencement of this chapter; and for this purpose it will be found very convenient.

For the better illustration of the three principal varieties of structure here alluded to, Dr. Baron has presented his readers with several diagrams, of which the following are pretty faithful copies.



"The first," he then proceeds to state, "represents the hydatids in clusters; the second shows the minute tubercles, forming a dense granulated texture; and the third explains what is constantly seen when tubercles, which may at first have been distinct, unite together. All these varieties may occur in one person, or even in one morbid structure, or they may be combined in many ways, and thus produce all those peculiarities in the appearance and structure of this class of diseases which we so often meet with. I do not bring this forward as a complete enumeration, but it comprises the most essential varieties

that we have had to contemplate. The last, in particular, is an important one, and demands further illustration.

Let the reader call to mind what has been said respecting the contents of tubercles. Next, let him suppose that the lines in the third diagram represent bodies of that kind; that each of these bodies may have a different structure; that one may be scirrhous or cartilaginous, that another may contain a pulpy matter, a third a fluid like cream, and that a fourth may possess its original character of an hydatid; or that any of the other varieties of substances or fluids which are detected in such bodies may be there. Again, let him suppose that each tubercle was at first separate, the one from the other; but as they increased in size, their distances from each other of course diminished, and that ultimately they came in contact and united. What would be the result of such an event? A tumour would be formed, divided by septa, and containing substances of various descriptions. But suppose that the tubercles had proceeded simultaneously in their changes, and that they did not differ in their structure. In that case, the tumour formed by their union would of course have a greater uniformity of appearance. The original divisions might in some places be visible, and the tuberculous character likewise: but both may be obliterated; and instead of a structure marking the boundaries and arrangement of the elementary parts of the diseased mass, we may find the whole transmuted and condensed into a solid substance, with little or no variety of texture. In this way various tumours are formed; and the facts which have been brought forward to elucidate the different steps of this process seem to throw light upon many of the most puzzling parts of a very obscure branch of pathology. I wish not, however, to extend the doctrine contained in this discussion beyond its due limits; for POSSIBLY THERE MAY BE EXAMPLES of diseases of this class to which it does not apply. But let it at the same time be remembered that we are not at present treating of any speculative question; and I wish it entirely to be kept separate from all doubts or reasonings which may be entertained as to the origin of hydatids and their conversion into tubercles. That such tubercles as I have described do exist, and that they grow and unite in such forms as I have represented, admits of a demonstration much more complete than we can in general look for in our profession. The progress which I have attempted to describe in the formation of tubercles and tumours, is sometimes presented to our observation in a very satisfactory manner on the outward parts of the body. Small circular vesicles are often seen growing on the edge of the eyelids. Their contents, at first, are quite limpid. After a time a change takes place, and a meleceritious or atheromatous, or cartilaginous tubercle may be formed. On the same eyelid, at the same time, these facts may be exemplified. One tubercle may have a watery fluid within a thickened cyst. In another the cyst may be unchanged while the matter contained in it is very much so. Ultimately a complete destruction of the hydatical character may be observed, and a hard tubercle substituted in its stead.

When ulceration is by any means induced in parts where tubercles exist, the ulcer in general assumes that appearance which is termed cancerous, as it is the peculiar arrangement of the elementary parts of the morbid structure which occasions the characteristic marks of the ulcer in question. What I refer to is very well seen when it attacks the lip. As the ulceration proceeds, the unequal granulated surface is more and more visible, and the tuberculous structure of the affection may be demonstrated by the appearance of distinct circular bodies projecting from the diseased surfaces. The examination of this complaint, by the touch as well as by dissection, very plainly proves what I have described; and the ulcerative process taking place in parts whose structure is altered by disease, cannot lead to a healthful termination till the diseased part is removed." Baron's Inquiry into the Nature of Tubercular Diseases, chap. ii. p. 113.

By following up the same mode of illustration, the talented writer has presented so admirable a theory of the formation of tumours of all varieties, as would appear to leave to future labourers, in the same field of research, little or nothing to discover. Nevertheless, another pathologist of equal talents has determined his attention most successfully to the same pursuit.

Dr. Hodgkin's theory is essentially founded, like Dr. Baron's, on the existence primarily of certain adventitious tissues, the result probably of irregular or accidental production of serous membranes; such tissues being variously formed developments or extensions from those membranes. The bladders or cysts which constitute some of the primary forms of certain adventitious bodies assumed by Dr. Hodgkin as the basis of his theory of tumours, are thus results of an analogous origin, to that of the simple parasitic hydatid which we observe to be so paramount an agent in the developments of Dr. Baron's theory.

Cysts have been divided by pathologists into two varieties of envelopes; viz. first, into such as are formed about the bodies which they contain, whether such bodies are supposed to have been produced in the system or to have been introduced into it from without. Of these kinds of cysts we have examples in the membranous envelopes of true hydatids; in those containing hair and fat, which are occasionally met with in the ovaries; in those containing the remains of tubercles and the results of suppuration, and also in the capsules enclosing bullets and other foreign bodies.

The other division of cysts is into those which are themselves the agents in the production of their own contents; and these, as will be presently seen, constitute the particular class of envelopes which Dr. Hodgkin has made most essentially available to the purposes of his theory.

"As far as I have looked into authorities," observes that gentleman, "who have treated on this branch of anatomy, it appears evident that there have been so much confusion and obscurity connected with it, that I am convinced, that it is one of considerable difficulty, and I must confess that I enter upon it with much diffidence; lest, in endeavouring to point out and avoid some palpable errors in others, I should fall into similar inaccuracies myself. For my present

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purpose it will suffice merely to notice some of those cysts, which, in consequence of having been brought forward by some pathologists in connexion with the adventitious serous membranes, must now be distinguished from them; since they do not participate in the peculiarities which I am about to describe, but are possessed of a pathological character of their own which entitles them to be spoken of separately.

1. The true hydatid is an example of a sac which secretes or produces the fluid which it contains.

2. Various cysts are not unfrequently met with beneath the common integuments, and are apparently very intimately connected with them, containing sebaceous, or meleceritious, or atheromatous, or other deposits, which may be at once both the products of such sacs and the cause of their distention.

3. Cysts are occasionally found secreting the materials they contain, which owe their origin to canals, of which the orifices have been more or less completely obstructed. Such are the cysts in the labial glands, ranula, those in the pancreas, and those which we so often find on the surface of the kidneys, and occasionally on the liver, and which, on account of the delicacy of the structure in which they are situated, we judge, rather from inference than from demonstration, to be occasioned by the obstruction of their excretory outlets.

4. Other cysts belonging to this class, but which are not to be confounded with the adventitious serous membranes, are produced by the distention of cells naturally existing in the body, but of which the contents from unexplained causes, have become morbidly increased and not unfrequently, at the same time, more or less changed in quality. Of this description are the enlarged vesicles of De Graaf, which, though probably never so much enlarged as to constitute ovarian dropsy, as some have supposed, are nevertheless frequently met with many times larger than their natural size. Cysts, which, from the description, in all probability produce as well as enclose the fluid found within them, are occasionally met with in the thyroid gland when enlarged so as to form the disease known by the appellations of goitre and bronchocele. These cells very probably depend on the original structure of the thyroid gland; but we know so little positively of either structure or functions of this body, that it would be rash to offer a decided opinion on that point.

"The adventitious serous membranes," proceeds Dr. Hodgkin, "like those existing naturally in the body, form completely shut cavities. As far as it is in our power to ascertain, they are wholly, or at least with very few exceptions, the result of an entirely new formation, dependent on some anomaly in the function of nutrition; but respecting the precise nature of which we are completely in the dark: and were I to offer any thing respecting it, I could do so only as a conjecture, which I am unwilling to mix up with the facts which it is my desire faithfully to lay before the society."

The author has considered it useful to premise the above sketch of the ingenious essayist's distribution of cysts already known, in order to enable his reader

the better to understand the theory of the formation of certain classes of tumours founded by Dr. Hodgkin, on the presumed existence of the adventitious tissues, which he accordingly professes to make the basis of his system. The development of his subject commences with the distribution of his adventitious serous cysts into two classes, of which the firstcomprises those "which are simple and for the most part solitary; but which, if accompanied by one or more similar membranes, owe this association to the accidental circumstance of the same cause, which produced the one, having likewise operated in its neighbourhood; rather than to the sac possessing the remarkable property of giving origin to new growths having the same character with itself; and of which the second comprises adventitious serous membranes, whose parietes present the very remarkable feature of producing other cysts of a similar character with themselves, or morbid growths, which, if they do not present, strictly speaking, the character of cysts, are nevertheless referable to the same type or mode of formation.

"Respecting the first class," he observes, "I shall have but little to offer. If there are any of the adventitious serous membranes which can be said to be formed from a pre-existing structure and not to be the result of a new formation, they are to be found in this class; since it is possible that some of them may have been produced by the distention of one or more of the cells of the cellular membrane, which a partial inflammation or some other cause may have shut off from their communication with the adjoining cells.

Serous cysts of the simple class are formed in various parts of the body. Within a cranium which had not been observed to present any cerebral symptom, I noticed a thin and delicate serous cyst, perfectly circumscribed and filled with transparent colourless serum. It was about the size of a nut, and was situated at the base of the brain, not far from the tractus opticus. Clusters of serous cysts are often found in the choröid plexus, and notwithstanding their number, they seemed to belong to the class of simple cysts; it being the fact that their number does not appear at all to depend on any disposition in their parietes to produce others of an inferior order. These serous cysts in the choröid plexus are manifestly vascular. They seldom exceed the size of small currants, and are often much smaller, although Dr. Hooper has given a plate in which they are represented to have been nearly as large as eggs. Simple serous cysts are occasionally formed in the eyelids, and since they form a very legitimate subject for surgical operation, they merit particular attention. Some are found along the edges of the tarsi, where they seldom acquire more than a moderate size, and their removal is effected with comparatively little difficulty. Those which are situated more completely in the body of the eyelid, and which at times extend pretty deeply into the orbit, are more difficult in their treatment and more serious in their consequences. It would appear that the female mamma is at times the seat of simple adventitious serous cysts, and that the cure of the tumours, to which they often give rise, may often be effected by allowing the contents to escape, when

adhesive inflammation, either spontaneously or artificially excited, unites the sides of the cysts and obliterates their cavity. The most frequent seat of these cysts is in the neighbourhood of the uterus, but more particularly in the folds of the broad ligament; or else intimately connected with the ovaries, if not imbedded in their substance. Cysts of this kind acquire at times a very large size, and constitute one of the forms of ovarian dropsy.

The second class of adventitious serous membranes are those whose parietes present the very remarkable property of producing other cysts of a similar character with themselves, or other morbid growths, which if they do not present, strictly speaking, the character of cysts, are nevertheless referable to the same type or mode of formation. Cysts of this kind, like those of the preceding class, are found in different parts of the body; but they are by far the most frequently met with, acquire the largest size, and present the greatest variety of appearances, in the neighbourhood of the uterus, and more especially in the ovaries and the folds of the broad ligaments."

It is under this head of his subject that our author has given his clearest description of the second class of cysts. "In this form of cysts," he remarks, "we see, on the interior surface of the principal cyst, elevations more or less rounded, and of various sizes, projecting into the interior of the cavity, and covered by a membrane which is continuous with the lining of the principal sac. On making incisions into tumours produced by cysts of this class, we find that they consist not only of the principal sac, forming the external and semicoriaceous investment of the diseased mass, but also of cysts of a secondary order within the principal one, and filled like it by a secretion often serous, but almost as frequently mucous." It is not, however, merely by this secretion that these secondary cysts are filled. On looking more minutely into them we shall generally find clusters of TERTIARY cysts, taking their origin from the interior parietes of the secondary, upon which will be found reflected the lining membrane of the cyst in which they are contained. "Cysts of the secondary order not unfrequently afford as complete specimens of a reflected serous membrane as either the pericardium or the tunica vaginalis; the lining membrane of the containing cyst corresponding to the reflected portion, as that covering the contained bunch of cysts does to the close portion. The proportion which the contained cysts bear to the cavity of the membrane reflected over them is extremely various. Sometimes the fluid, especially when it is of a serous character, nearly fills the containing cyst, while the bunch of cysts is of very inconsiderable size. At other times, the superior cyst is almost entirely filled by those of the inferior order; in which case, we may generally find that the nodulous or tuberose elevations which we may have observed on the exterior of the containing cyst are occasioned by the unequal development of the contained cysts: for those, which have grown the most rapidly, and have attained the largest size, forcibly dilating that part of the cyst which is reflected over them, produce a KIND OF HERNIA at that part. It sometimes happens that the distention occasioned by the growth of the con-

tained cysts, is sufficient not only to disturb the even surface of the containing cyst, but actually to produce a rupture which may admit both of the escape of its fluid contents and of the unrepressed growth of the secondary or tertiary cysts which had taken their origin from its internal surface. The inferior cysts themselves are found to contain a serous or mucous secretion, and very often to produce another order of cysts possessing the same character with themselves. It is certainly by no means surprising that these cysts of different orders which sometimes present the appearance of delicate and pellucid sacs filled with clear and colourless serum, and possessed of the astonishing power of giving rise to an almost innumerable multitude of cysts, presenting the same character with themselves, should at the first view be confounded with true hydatids; but it is no less surprising that a little careful inspection did not at once irrevocably remove the delusion: first, because the bunches or clusters of secondary cysts are invariably and permanently attached to, and continuous with, the internal surface of the superior cysts in which they are contained; and secondly, because delicate vessels are seen ramifying from the one upon the other.

The cysts which I have been describing as formed on the internal surface of the first formed cyst, at times, pour out a part of their contents into the interior of the larger cyst; either in consequence of an extensive rupture produced by the development of a contained order of cysts, as I have before stated, or by small apertures, which likewise appear to be the results of distention. In both these cases, but especially in the latter, the opened cysts bear a considerable resemblance to mucous follicles on a large scale, and appear to be the principal source of the very copious and rapidly produced mucous secretion, which is a characteristic feature in many cases of ovarian dropsy.

The membranes of which the cysts as above described are formed, whether of the second or third order, are liable to inflammation. The product of such inflammation, like that of the inflammation which takes place in the serous membranes naturally belonging to the body, may either be of the plastic or of the inorganizable kind. In the former case, it leads to the formation of adhesions between the close portion of the membrane or that which constitutes the contained cluster of the cysts, and that portion which is reflected over them, forming the parietes of the containing cysts. It is the formation of these adhesions which so frequently renders it difficult to demonstrate the structure which I have been describing. The product of the inorganizable kind of inflammation, we find to be a secretion more or less puriform in its character. This secretion is moreover sometimes found in one or more of the secondary cysts. At other times it finds a way to escape into the interior of the primary cyst, and thus contributes to the variety in the appearance presented by the fluids drawn off in the operation of paracentesis for the relief of ovarian dropsy. This, however, is not to be regarded as the sole cause of the occasional puriform appearance of the fluid evacuated by this operation. It is doubtless in some

instances to be attributed to a sort of ulceration or abrasion which sometimes takes place on the internal surface of the principal cyst; and which we find both in that part which is formed by the cysts developed within its parietes; and in that part of the parietes which happens to be free from them; although it is most frequently met with in the former situation.

Such are the most striking characters of that form of cysts which may be regarded as affording the type of the second class of adventitious serous membranes. The circumstance upon which I wish to lay more particular stress is the production of more numerous clusters of cysts arising from different points on the interior of the superior cyst.

The cysts composing these contained clusters have neither the narrow necks nor peduncles which mark one of the varieties into which this species of production declines; nor, on the other hand, those broad and extended bases and that flat and compressed form which mark the opposite variety in which the encysted form, and more particularly the disposition to produce a reflected membrane, is less easily made out.

That variety of cysts which is characterized by slender peduncles is first to be described. This form presents us with all the gradations, from the form already described, down to the slenderest filaments. I have stated, that it is at particular points on the internal surface of the superior cysts, that the clusters of inferior cysts take their origin. It sometimes happens that the number of cysts forming the cluster is so great in proportion to the space which they occupy, that, like trees too thickly planted, they interfere with each other's growth. Their development is more or less limited as to an increase of dimension in their length. Yet as their free extremities are allowed to diverge, we sometimes see the slender peduncle gradually dilating into a pyriform cyst. At other times the dilatation does not take place till near the extremity of the peduncle, and then it produces a cyst more nearly resembling a grape or currant. At other times no dilatation takes place; probably from the cavities being wholly obliterated. The pedunculated cysts, or the extreme of this variety in the form of filaments, are either produced singly, but in the closest approximation from the particular part of the containing cyst; or they may be attached to it by a common peduncle, from which the proper peduncle of each proceeds. These elongated productions sometimes become highly vascular, and in defect of an internal secretion, contribute largely to that which occupies the sac into which they project. Sometimes on the contrary they are very feebly organized, and appear ultimately to lose their vitality, in consequence of the kind of strangulation which they receive at the narrow neck, by which they are attached to the containing cyst. It would appear that the pedunculated cysts and filaments which have thus lost their vitality, are a pretty frequent source of irritation to the serous membrane reflected over them, which constitutes the containing cyst. The product of the inflammation thus excited being of the inorganizable kind, often forms a thick and grumous substance, which sometimes may be washed out from the bunches

of filaments; whilst at other times these come away with it in the form of shreds. The bunches of slender pedunculated cysts, and the tufts of filaments almost resembling tassels, sometimes proceed at once from the inner surface of the principal cyst; but they are more frequently met with growing from the interior of the secondary cysts.

I now proceed to notice that variety in which the secondary cysts, so far from being attached by slender peduncles, have that broad attachment and flattened form, which, without the assistance of the intermediate gradations, could scarcely be referred to the type which I have drawn. The secondary cysts in this variety, as well as in the two former, are collected in clusters on the parietes of the superior cyst; but they appear to produce a circumscribed and more or less considerable thickening of the parietes, rather than a prominent tumour covered by a reflected membrane: they constitute, however, perfectly shut cavities; acquire at times a considerable size; contain in some instances a serous and in others a mucous secretion; and produce in their parietes inferior orders of cysts, having like themselves broad bases and flattened forms. From the extent of their bases, the secondary cysts, in this variety, occupy proportionally a much larger space on the internal surface of the containing cyst; and by their development, although they increase its size, they seem more completely to encroach on its particular cavity. In cutting into a tumour composed of this form of cysts, we may find, it is true, several cavities of considerable size, but we shall probably not find the greater part of the fluid collected into one particular cavity. I am not aware that the secondary cysts in this variety ever lose their vitality from defect of nutrition: but if such an effect be ever produced, it cannot be the result of so limited and partial a cause as that which we have seen to operate in the preceding variety.

There is another point of difference no less worthy of remark as distinguishing this variety from the two preceding, that is to say, from the standard and pedunculated variety, which consists in the arrangement of the subordinate parts. In the two last-mentioned forms, in consequence of the limited extent of the spots, whence the secondary productions take their rise, they necessarily acquire somewhat of a radiated arrangement; whereas, in the variety with which we are at present occupied, it is difficult, if not impossible, to reduce its internal structure to any definite arrangement.

The female mamma and its immediate neighbourhood are occasionally the seats of the formation of adventitious serous cysts, assuming the form of reflected membranes; bearing the closest resemblance to those which present themselves in the testicle; and having in consequence received an analogous appellation, no doubt with great inaccuracy, viz. that of the hydatid breast. The cysts formed in the breast thus affected contain bunches of secondary cysts, and a fluid sometimes serous, sometimes very nearly resembling synovia, and at other times one of a mucous character. It does not appear to be an affection accompanied by any constitutional taint, nor to be at all ma-

lignant in its nature; the disease being wholly removed by the removal of the part.

Bunches of cysts are occasionally formed in the eye: they are more interesting from the importance of the organ which they affect, and from their situation, so remarkably favourable for the inspection of their progress, than from the size to which they attain. They cannot, however, fail to excite very serious apprehension, since in their commencement it must be difficult or even impossible to distinguish them from the commencement of a malignant disease. Though they should not present this character, and therefore not endanger the life of the patient, they will at times completely deprive him of the use of the affected eye. The production of these cysts in the eye may be sometimes traced to external violence; at other times the exciting cause is more obscure.

"I have now to solicit particular attention to the different forms of HETEROLOGUE DEPOSITS, which may be referred to the same general laws of formation which I have endeavoured to explain when speaking of ovarian dropsy. Many of the accidental formations have been called heterologue, to denote their dissimilarity from those structures which exist naturally in the body. They are marked by a certain uniformity of character, and more particularly by their mode of formation. Most of them have been styled MALIGNANT; and they may be reduced under the four following heads. The first comprises those cases which consist in the production of well-formed cysts, generally assuming the character of reflected membranes, unaccompanied by a constitutional taint, and commonly called hydatids. These may be considered as typical of the order at the head of which they are placed. I have already detailed their most striking characters.

The second division comprehends true scirrhus, although it must be confessed that it is often difficult to say whether this form is applicable or not; since the natural boundaries are most indistinctly marked between this and some other members of the family.

The third division comprises fungus hematodes, fungus medullaris, medullary sarcoma, fungöid disease, spongöid inflammation, cerebriform cancer, etc. etc.

The fourth division comprises melanosis in that particular form which exhibits a structure resembling the preceding, to which the term melanosis, as descriptive of a particular specific affection, has been by some restricted.

Tumours of the description generally found under this division have a more or less rounded form. On making the section of them they present various appearances; but are all more or less divided by septa, which affect sometimes a radiated form, and at others a cellular character. Both of these characters have been insisted on by many writers on this subject. But I believe the differences which have been observed in many instances depended on the direction in which the sections had been made. The mode of examination by means of sections, if it be the only one employed, is not better adapted for the investi-

gation of these tumours than for that of the brain. The objection to it is increased by the plan of immersing the specimen in alcohol, which is sometimes had recourse to for the purpose of hardening the parts. By this measure the fluids are coagulated, and the transparent parts rendered opaque. We consequently destroy two of the most important characters calculated to assist the examination, by marking the boundaries of structure and arrangement. It is on this account that almost all the preparations which I have made myself, or seen made by others, are more or less unsatisfactory; and that even in the most successful cases; fall incomparably short of the inspection of the recent specimen. If we carefully dissect down to the surface of one of these tumours, we shall finally find that it has a capsule, or covering, which has, I believe, generally been supposed to consist of the altered and condensed cellular membrane of the parts which have given way before the growth of the tumour. This idea is probably correct with respect to the unequally thick external part of the capsule; but if we dissect carefully, and examine those tumours in which the process of decay has either not commenced, or has made very little progress, we shall find that surface which is next to the mass of the tumour more or less smooth and even; and on raising it we find that it is reflected over one or more somewhat pyriform bodies, attached by a base, which is generally narrow and peduncular, to some part of the circumference of the enclosing capsule. Unless the tumour is very small, it is much more common to find several than a single body of this kind; and as there is often little if any fluid intervening between them and the enclosing capsule, their form is somewhat modified by their mutual pressure. Sometimes, though more or less closely applied to each other, these pedunculated bodies are perfectly detached at their sides, and may consequently be readily traced to the point which forms the common origin of their peduncles. At other times, however, they are so adherent among themselves, and the membrane covering them is so tender and delicate, that without very great care the arrangement of their structure may be overlooked, in consequence of the pedunculated bodies being broken or torn through, in a different direction from that to which their mode of formation would naturally dispose them. It must be sufficiently obvious that the appearance presented by the section of a tumour, such as I have just described, must be very materially affected by the direction in which the section is made. If it pass through or near to the point at which the pyriform bodies take towards the circumference, the edges will consequently be seen to assume the form of radiating lines. On the other hand, if the section be made more or less nearly transversely to the axis of those bodies, their sections will convey the idea of cells of various shapes. If we continue dissecting and raising the outer cyst, forming the reflected membrane which covers the radiating pedunculated bodies, we shall generally find that on one or more sides it dips down deeply into the mass of the tumour, forms a part of the septum which separates the one packet of pedunculated bodies from the

others, which generally concur to form the mass of the tumour; for it comparatively rarely happens that the tumour is composed of a single cyst filled with pedunculated bodies. On examining the different encysted packets of pedunculated bodies which compose the tumour, we shall often find some indication of their having taken their origin from nearly the same spot; which is generally the most indurated part of the tumour. In those in which the internal growth is the most active, we shall find that a process has taken place perfectly similar to that which I described as occurring in ovarian tumours, when the development of the contained cysts produced the hernia or rupture of the containing one. The secondary cyst or cysts which make their way through the containing one, rapidly advance when they are freed from the restraint which its pressure had occasioned; and thus constitute another tumour, which adds to the original mass.

If we examine the structure of this new tumour, we shall find that the subordinate growths of which it is composed radiate from the point at which this tumour made its escape from the original one. At the same time that the escaped cyst or cysts acquire their more rapid growth, they often acquire a new character with respect to their consistence, which is generally much more soft and tender. The most striking illustrations of this principle are met with in osteosarcomatous tumours, which very decidedly belong to the class of which I am speaking. Whilst that portion which constitutes the original part of the tumour, and has been formed beneath the pressure of the periosteum, is dense and more or less loaded with bony matter; that portion which has grown through the openings presented by the distended fibrous tissue is of luxuriant and rapid growth, and is almost wholly composed of soft matter. Those parts of the tumour in which the rapid and unrestrained growth is most remarkable, are generally situated near the circumference; where they are at once exempt from the restraint of mutual pressure, and receive a more abundant supply of nourishment from the surrounding natural structures. A marked difference exists between those just described and others in which development has been restrained or vitally lost by pressure, and consequent defective supply of nutrient matter.

I have already explained the mode in which these effects are brought about in the ovarian tumours, in which the secondary cysts are thickly crowded, and attached by very narrow peduncles. Precisely the same process takes place in the tumours of which I am now speaking; and when we make a section through one of them which happens to be composed of many secondary tumours, and which consequently presents many centres of radiation, we shall often find that the pedunculated bodies connected with one or more of these centres have lost their vitality by a natural strangulation or ligature; and also that the immediately adjoining parts, which yet retain their vitality, irritated by that which has now acquired the character of a foreign body, are brought into a state of inflammation. The result of this compound action is the forma-

tion of a cavity, filled with broken-down and softened matter of a peculiar character, intermediate between suppuration and gangrene. This process very frequently takes place before the exterior of the tumour exhibits any symptom of irritation or inflammation, and to my mind very satisfactorily accounts for that disposition to central softening or decay, on which Laennec, Wardrop, and some others, have so forcibly insisted, as characterizing the progress of heterologue deposits. At the same time I think I am correct in stating that for the production of this form of gangrene or softening, the supply of nourishment should be pretty promptly cut off by the operation of the natural ligature. When the process proceeds more slowly, the parts which are under its influence gradually acquire an increasingly dense structure, and, ultimately becoming penetrated by earthy matter, are allowed to remain unproductive of serious irritation, notwithstanding their deteriorated organization and diminished supply of nutriment. Striking examples of this process are met with in the scirrhous tubercles developed in the uterus, and I have likewise seen it in the liver.

Tumours, such as I have described, in the course of their development, produce, by the irritation which they excite, a greater or less degree of thickening of the surrounding cellular structure, and sooner or later become visible externally, dilating the integuments which are stretched over them. The points at which this distention is most considerable are inflamed; the inflammation proceeds to ulceration; and the tumour either sprouts luxuriantly at the part from which the pressure is thus removed, or participates in the ulcerative process; which latter event, for reasons which I shall presently explain, is that which we have most frequent occasion to observe.

The ulcer, the production of which I have described, is worthy of special attention, and has been particularly insisted upon as peculiarly characteristic of malignant disease. It is universally described as presenting elevated and everted edges; whilst its ragged and depressed central portion is bathed by an unhealthy secretion, to which the name of pus can scarcely be applied.

The mechanism by which this peculiar ulcer is produced is well worthy of attention. I have shown that at the external part of the tumour its growth is the most luxuriant, both from the want of pressure, and from the increased supply of nourishment. This will explain why the circumference of the tumour is the most elevated. The central parts, on the other hand, have not only to encounter the pressure which they sustain from the surrounding parts of the tumour, and to suffer the diminished supply of nourishment which this pressure occasions, but moreover, ulceration having removed the integuments, all supply of nourishment from the surrounding natural structures is necessarily cut off. The depth and irregularity of the central part of the ulcer are often further promoted by a communication being formed between this part of the ulcer and a cavity commenced and produced in the interior of the tumour by the process already described. We may be easily convinced of the general accuracy of the descrip-

tion which I have endeavoured to render intelligible, by making a section through a recent specimen of an ulcerated tumour of the kind I am now describing, in such a manner that the incision may pass through the diameter of the ulcer: by then carefully dissecting the cut edge of the ulcer we may almost always find satisfactory evidence that the elevated margin is composed of radiated pedunculated bodies; whilst, in the centre, this disposition is less distinct, much more condensed, and exhibits little, if any, trace of organization, excepting in a few spots in which inflammation appears to have been set up by the irritation caused by the neighbouring dead parts. With respect to the more fluid parts of tumours, although these generally bear a very small proportion to the solid part, we shall almost always find a fluid in a greater or a smaller quantity; which, on close inspection, is seen to be either contained in cells of various sizes, or lodged between the pedunculated bodies and the membrane reflected over them. This fluid is by no means uniform in its appearance and qualities. In that form of tumour which I have taken as the type in which the encysted structure is the most evident, in which the surrounding parts are the least altered, and in which there appears to be no constitutional taint, the fluid is most abundant, and more frequently, than in the other forms, presents a serous character; but even in this form, we find it passing through the various degrees of ropiness, in some of which it very closely resembles synovia, until we arrive at the form of thick and perfect mucus. In some cases it is also met with of a yellow colour, as if tinged with bile, and at other times streaked or spotted with blood. It is sometimes more intimately mixed with blood, or cruor. Most of these appearances may be met with before the contained cysts, or pedunculated bodies, have lost their vitality; yet the last-mentioned appearance, or that in which the fluid is soiled by cruor, is most likely to occur when this change has taken place. At other times the fluid contained in these cells, in which the inferior cysts or filaments have lost their vitality, is yellow, opaque, and puriform, or grumous. In those tumours which present a very dense structure, bearing a considerable resemblance to cartilage, the fluid which may be observed to exude from those parts of the incised surface at which the vitality of the structure has not been lost before the removal of the tumour, or the death of the subject, is I believe invariably of a viscid mucous character. This fact deserves notice, as forming one of the features of resemblance between the tumours with which I am now occupied, and those more manifest serous cysts with the description of which I commenced. In these dense tumours we may often observe small scattered yellow opaque points, presenting the same character with those already described as occurring on a larger scale where vitality has been lost by strangulation.

The differences observable in the solid part of these tumours merit particular attention, since it is on them that the distinctions drawn by pathologists have been principally founded. We find it presenting every gradation, from an almost stony hardness, to the consistence of the brain of a child, or of weak glue. It

is not, however, in the degree of consistency that the only difference exists. There are likewise differences of structure, which appear to depend partly on the mode in which the contents of the cyst have been thrown out, and partly on the susceptibility of organization possessed by the matter effused. In those cases in which the structure on which I have insisted is most evident, the most subordinate pedunculated bodies are well defined, and each enclosed in a particular membrane. Although these membranes may be adherent amongst themselves collectively, they entirely fill the sac which is reflected over them; they are seen to take their origin from one particular part; and their small, thickened, and feebly organized membranes, principally constitute the solid part of the tumour. At other times, instead of a bunch of numerous small cysts or pedunculated bodies, the enclosing cyst or reflected membrane, as I have already said, contains very few bodies, or even a single body of this kind, which, if examined at an early period of its formation, will be seen to bear a very close resemblance to some forms of polypi, and to be nearly or quite transparent, but of an amber or sanguineous colour. It appears to consist of tender coagulable lymph, which at times admits of the elongation of vessels into its substance. These vessels ramify in a radiating form from the point to which the peduncle is attached; they seem, however, to be incompetent to maintain the vitality of the structure in which they are distributed. This structure, as its degree of vitality is lowered, becomes opaque: it is white, and resembles the medullary structure of the brain if its small vessels do not give way; but when they do give way, the blood which they effuse pervades the opaque matter, and more or less deeply discolours it. I have never met with the last described appearances, except in tumours of rapid growth dependent on fungus hæmatodes or medullaris. I am induced to lay some stress upon them, since they appear to me to explain why we are sometimes able to inject large masses of fungöid matter, and why, whilst they yet retain some degree of translucence, we may without injection detect a few vessels passing through the substance. I think, moreover, that they tend to reconcile the conflicting opinions which have been advanced respecting the organizability of fungöid matter. Sometimes the more or less solid matter appears to consist of a secretion from the internal surface of the membrane generally, rather than of a growth protruded into its cavity from a particular part of its circumference. In this form we occasionally meet with a laminated structure, such as is observed in an aneurismal clot; I am not aware that it ever exhibits the slightest indication of organization, although it not unfrequently becomes infiltrated with extravasated blood. This form, like the preceding, is principally, if not solely met with in fungöid disease. Some tumours of an almost gristly hardness, and such as acquire a considerable size before they pass into the stage of softening or ulceration, appear to be formed on the type of those ovarian tumours which appear to be composed of cysts with broad bases, in which the radiating structure is but little observable. I have seen, in examining cysts, in which the structure which I have now repeat-

edly endeavoured to explain was unequivocally present, some appearances which I consider worthy of observation. The cysts of which I am speaking contained a substance which may perhaps be best described by comparing it to the crystalline lens, when it has become in some degree softened by decomposition; although somewhat less uniform than that body, both in consistence and appearance. That part which was nearest to the containing cyst was the least firm and consistent, but at the same time the most transparent. It was too transparent and colourless to conceal the firmer interior of the part within; which was rendered distinguishable by a slight degree of opacity, and appeared to consist of a cluster of small pyriform grains. Nothing like a membrane could be distinguished to enclose these granular bodies individually, nor to separate them from the transparent matter in which they were placed. Almost all the tumours of the second class of adventitious serous membranes, viz., those whose parietes present the very remarkable property of producing other cysts of similar character with themselves, have been usually considered malignant. But of this term, as well as of any peculiar condition or form of disease represented by it, it is exceedingly difficult to give a precise idea. The term, however, is considered conventionally as applicable to scirrhus, or hard cancer, and to all the varieties of soft cancer, or medullary sarcoma. Scirrhous tumours are especially characterized by their hardness, which, in many instances, is at least equal to that of cartilage; whilst, however, they want the uniformity of texture of that peculiar tissue; and, therefore, in that respect, bear a nearer resemblance to fibro-cartilaginous substances; and hence, when divided by incision, they give rise to a peculiar noise, and are said TO CRY UNDER THE SCALPEL.

It is not, however, only in density of structure, but also in colour, that the scirrhous tumour exhibits a want of uniformity. "The hardness of these tumours," observes Dr. H., "appears to be intimately connected with the slowness of their growth; and the comparative indistinctness of their structure, to which I have alluded, is another effect proceeding from the same cause. True scirrhous tumours appear sometimes to depend on a single primary tumour; at other times several may satisfactorily be made out. That part of the tumour which appears to be the common origin of the primary cysts, where there are more than one, or from which the contained pedunculated bodies radiate, when there is only a single primary tumour, is in general the most indurated portion, and is at the same time the most indistinct in its structure. When examined externally, after the surrounding natural structures have been carefully dissected, this part of the tumour is found to be most irregular, has a somewhat corrugated appearance, and suggests the idea of its having been the sort of root by which the adventitious growth had been implanted on the natural structures. The radiated appearance, so strongly insisted on by most authors who have described scirrhous tumours, is particularly conspicuous when the section passes through this point."

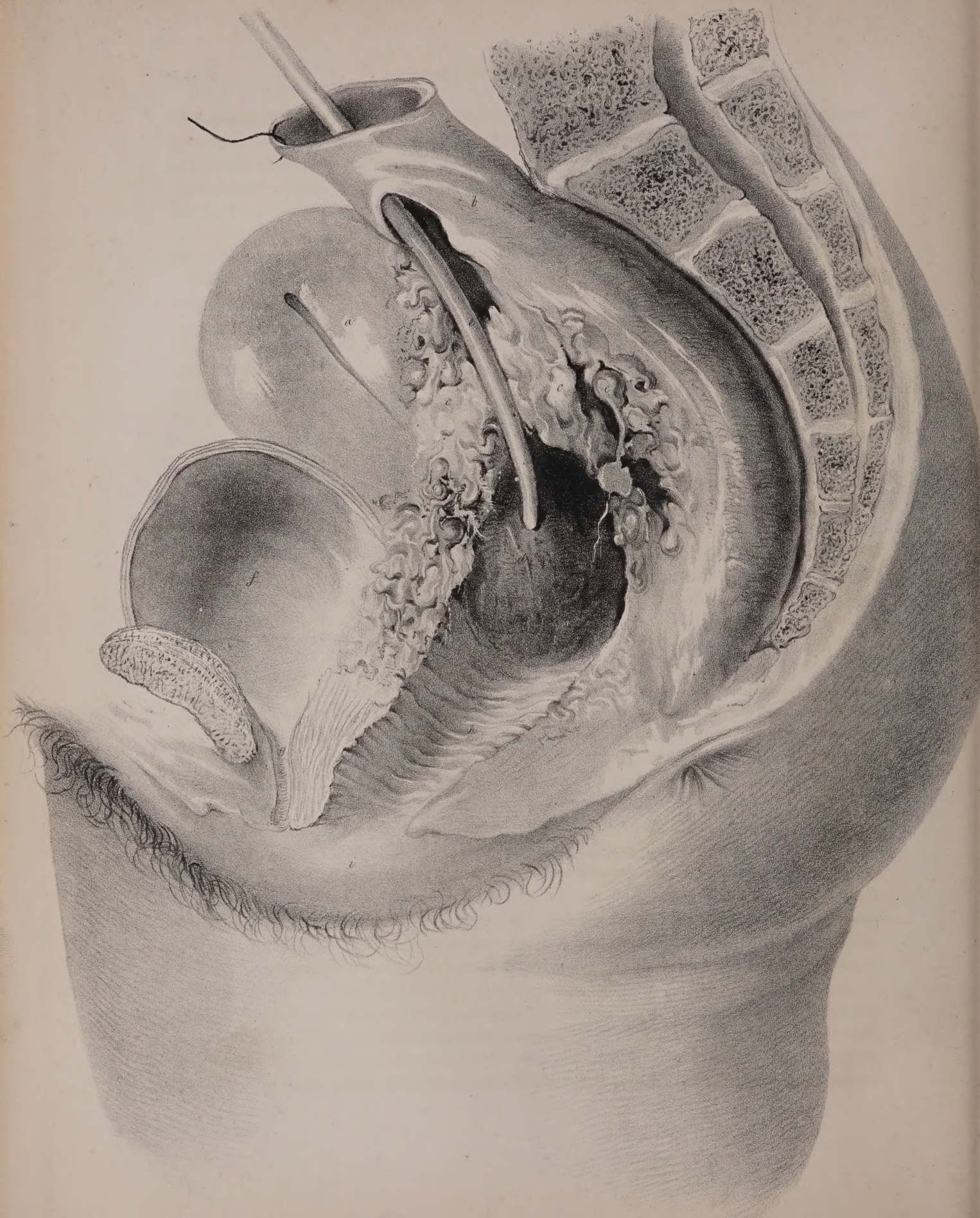
The fluid part of scirrhous tumours bears, in general, a very small proportion

to the rest of the structure. It has, however, a viscid or mucous character, more especially where softening has not taken place; but where this process is going on, it assumes the character of an offensive ichorous discharge.

It often happens that the process of softening commences at one point, within the body of the tumour. At other times, it may be observed to present itself at several points at the same time; whilst, again, in others, the ulceration through the integuments would appear to be the first part of the process of decay.

True scirrhous tumours, notwithstanding the length of time during which they continue to grow, rarely acquire a very considerable size. Indeed, it not unfrequently happens, that the wasting of the neighbouring structures more than compensates for any increase of volume dependent on the new formation.

This form of malignant disease is one essentially of advanced periods of life. It would indeed seem that the more resisting nature of the different tissues, and the more tardy and feeble operation of the function of nutrition, which characterize the decline of life, are the principal causes of scirrhus being a malignant disease of old age. The chronic characters which belong to scirrhus are not confined to the essential part of the tumour itself, for the surrounding structures frequently participate in it. By repeated attacks of inflammation of this description the neighbouring cellular structure becomes thickened and indurated. It is on this altered structure, implicating the nervous fibrils of the part, that I apprehend, principally depends the peculiar and characteristic lancinating pain which accompanies the accessions of inflammation, to which an organ affected with scirrhus is continually liable. This indurated cellular membrane has often been observed extending from the external part of the tumour, amongst the adipose structure in which the mammary gland is situated. Like inflamed and thickened cellular membrane resulting from other causes, this structure becomes gradually contracted, and most materially contributes to the puckering and distortion of the affected part. In the mammary gland, in which this puckering has been chiefly noticed, the traction exercised by the lactiferous tubes is the cause generally assigned. I do not deny that they may have some share in producing this effect, both by their own obliteration and contraction, and also as the medium by which the gland, altered and displaced by the tumour, acts upon the nipple; but I feel pretty confident that the thickening and induration of the cellular membrane surrounding the tumour is the principal one. These prolongations of indurated cellular membrane, proceeding from the tumour into the surrounding adipose substance, appear to have been considered as prolongations of the radiating lines observable within the essential part of the tumour, and to have been regarded as a part of the tumour itself; in fact, as fibres of the disease, on which its reappearance after an operation mainly depends. For my own part, I very much doubt whether this altered cellular membrane itself really possesses any thing of the malignant nature; although I can easily conceive that the tumour by which the disease makes its renewed appearance, may have taken its origin in the course of one of those indurated prolongations left in the sur-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rounding structures. This circumstance is probably to be explained in the following manner:—In dissecting away the fat from the principal part of a scirrhous tumour, I have had occasion to notice these prolongations of cellular membrane; and, in doing so, I have observed very small and delicate pedunculated cysts, some of which scarcely exceeded the size of a pin's head, dispersed upon the aforementioned cellular membrane itself. It is to the development of one or more of such cysts, rather than to the cellular membrane itself, that the new tumour is to be attributed.

True scirrhous tumours, in many instances, remain for a length of time in an indolent state, without passing into a state of softening, or producing an external ulceration. Before this ulceration takes place, the tumour becomes adherent to the skin; and although there is generally but little redness observable in these tumours, a spot, most frequently of small extent, becomes of a bright or cherry-red, or of a purple or livid colour, before the continuity of the integument is destroyed.

The characters of a malignant ulcer are, in general, very completely seen in the ulcerative stage of true scirrhus. It may however be said, that the ulceration of true scirrhus is attended with a more decided loss of substance than that of cerebriform cancer; which, on the other hand, is generally attended with large, rapid, and irregular growths, from the ulcerated surface; whence the names of fungöid disease, fungus medullaris, etc., have, in all probability, been derived. The ulceration of true scirrhus is indeed bounded by its elevated wall of circumvallation; but the central parts, gradually hollowed away by the softening of the very imperfectly organized structure, present a foul and deep chasm. It is to this condition of the ulcerative stage of true scirrhus that the appellation of cancer, or carcinoma, in the most restricted sense, has been applied. Some pathologists have considered that both cancer and fungus result from the degeneration of scirrhus; that if acute inflammation attack the scirrhous structure, ulceration follows, presenting all the characters of cancer; but that if the structure undergoes a gradual degeneration, and breaks down, a cerebriform mass is the result. I must avow my dissent from this doctrine, as I have no reason to doubt that these two species of diseased structure depend on differences which exist AB INITIO; and I cannot help being surprised that cancer should have been considered as of a more acute form than the fungöid disease.

In a cancerous or carcinomatous ulcer, it not unfrequently happens that one or more vessels give way, and lead to a hæmorrhage, which in some instances is very profuse. Such hæmorrhages are, however, very different from those which form so characteristic a feature of fungus hæmatodes. In the case of cancer, the greater part of the ulcerated surface, although irregular, is possessed of considerable, almost cartilaginous firmness. The hæmorrhage which it furnishes takes place from particular points; and if we attempt to inject such an ulcer with fine injection, either after its removal from the body, or after the death

of the subject, we obtain but very imperfect success; because the larger portion of the injection escapes from the open arteries. Such hæmorrhages are so far from being attended with an exuberant sprouting fungous growth, that at times they seem to be the principal means of procuring a temporary improvement in the appearance of the ulcer.

It has indeed sometimes although very rarely happened, that tumours possessing the characters of true scirrhus, and regarded as such, have become detached by the sloughing of the surrounding structures; and being in this way completely thrown off the system, the cavity which they had occupied has been filled up by granulations, the surface cicatrized, and a permanent cure obtained. The occasionally successful practice of some empirics consists in attempting to induce this process artificially.

Scirrhous tubercles IN THE BODY of the uterus differ so much, in some of their principal circumstances, from those assumed by Dr. Hodgkin as representative of the general class to which they belong, as to have induced the ingenious essayist to give them a separate notice. "They possess," he observes, "a well-defined rounded figure, a close and compact tissue, in which the structure referable to the same type as the cysts to which I have so often alluded, is tolerably distinct, on a much larger scale than that generally observable in true scirrhous tumours in other parts of the body. They rarely, if ever, present any cells or cavities. They acquire a much larger size than true scirrhous tumours in other parts of the system. They never, or at most very seldom, pass into the stage of softening or ulceration; and when formed in the uterus, without any other organ having exhibited a tendency to the production of scirrhus, the formation almost always continues wholly confined to this organ. Consequently they do not appear to be accompanied by any constitutional taint. On the other hand, their occasional formation in conjunction with the primary scirrhous and cancerous affection of the mamma and other parts, necessarily connects them with the malignant disease of which I have been speaking. Although these tumours or tubercles are little liable to the process of softening, their formation disposes them, in common with other growths of the same family, to a diminution or loss of their vitality. It would seem, however, that this takes place very gradually, and is accompanied by deposition of bony or earthy matter; so that by the time the nutrient vessels are nearly or quite obliterated, the scirrhous is converted into a bony structure little susceptible of change, and which may consequently be retained to an almost indefinite period in the system, without material injury to the organ in the substance of which it is imbedded. The peculiarities which I have just described as belonging to scirrhous tubercles of the uterus, are doubtless, in a great measure, referable to the part in which they are developed. In the first place, as I have before remarked, it is naturally disposed to accommodate itself to a stimulus, which excites to an increased supply of nourishment. It is no less remarkably calculated to yield to the distention of bodies progressively increasing within it. Moreover, its structure is

but little susceptible of morbid actions. Hence the new or adventitious growths have an abundant supply of nutrient fluid. Their enlargement meets with no violent or partial obstruction. But at the same time it is subjected to a steady, moderate, and uniform pressure, which tends materially to diminish the relative proportion of the fluid parts; to which, in the instance before us, we may attribute the absence of cells, and the firm and compact structure of the tumours. Since the fibres of the uterus rarely contract, excepting during parturition, we need not be surprised to find that the scirrhous tumours, developed amongst them, are very far from being similarly modified to those which are formed amongst muscular fibres, as, for instance, in the deltoid or masseter muscles. To the little susceptibility which the uterus exhibits with respect to morbid actions, we may most probably attribute both its own immunity from the scirrhous affection, and the absence of constitutional taint."

In what follows of this most ingenious paper, the author proceeds to adapt his theory to the second variety of carcinomatous disease, viz., that of soft or cerebriform cancer. "The affection of which I have next to speak, notwithstanding that it must have been long familiar to the eyes of practical pathologists, has only recently been regarded and described as a particular disease. It has, however, already received several names, which by some are almost used indifferently, or as synonyms; whilst by others some of them are considered as denoting different varieties, if not species, of malignant disease. Thus, we find the term encephaloïd tumour, cerebriform cancer, medullary sarcoma, spongoïd inflammation, fungus hæmatodes, and fungoïd disease.

One of the most striking features which distinguish this disease from true scirrhus, is to be found in the extent and rapidity of the development of fungoïd tumours. Whilst true scirrhus, as has been seen, often remains for a considerable length of time in a chronic and indolent state, and after a growth of some years produces a tumour of only a moderate size, the fungoïd tumour in the space of a few weeks is sometimes seen to attain to a prodigious size, and to pass through all the stages which belong to it in common with the other members of the same family of adventitious structures. Whilst true scirrhus is almost exclusively a malady of advanced life, the fungoïd disease makes its appearance in individuals of every age; but its most formidable and extensive ravages are seen in the young. Whilst in true scirrhus the fluid matter forms a very inconsiderable and scarcely noticeable part of the structure, in the fungoïd tumour it is frequently pretty abundant, presents a great variety in its characters, and is often collected in cavities of considerable size. In the scirrhous tumour, the peculiar mode of formation which I have pointed out must often be inferred by analogy, guided by faint and partial traces; but in the fungoïd disease we meet with those unequivocal manifestations which almost speak for themselves. In true scirrhus the traces of vascularity are very faint; but in the fungoïd disease, the adventitious membranes possess a high and preternatural degree of vascularity. The vessels which we see ramifying in them are

not only numerous but large. By some they have been considered principally arterial; by others venous. They appear to consist of the capillary vessels of Bichat on a large scale: and as we sometimes meet with these membranes of a bright and arterial red, and at other times of a venous or livid hue, it seems probable that accidental or fortuitous circumstances have the principal share in determining to which class of vessels their capillaries should most incline. These newly formed vessels, though large and numerous, are extremely weak and tender, and derive little or no support from the structure through which they ramify or by which they are surrounded: hence they are liable to give way at numerous points; whence proceed those frequent and extensive hæmorrhages, which so frequently characterize those tumours, and which doubtless suggested the use of the term fungus hæmatodes which has not unaptly been applied to many of them.

Sometimes the hæmorrhage from these vessels produces an effusion into the cavity of the membrane reflected over an inferior order of pedunculated cysts or bodies, and distends it into a cavity filled with blood, the characters of which will vary according to the time which has elapsed between its effusion and the making of the examination. At other times the effused blood infiltrates the more solid parts of the tumour, and produces an appearance which by Laennec has been well compared to an apoplectic clot.

The more solid parts of the cerebriform tumour differ in a marked manner from that which composes the scirrhous tumour. In this disease the secondary cysts, which are often of large size, generally become filled with a material which at first bears a considerable resemblance to tender or feebly coagulated fibrine or plastic lymph. Into this substance new vessels quickly shoot; but being neither susceptible of perfect organization, nor calculated to remain inert and dormant, it speedily but gradually loses its vitality, and like other transparent parts in which such a change is effected, gradually becomes opaque, and bears, in consistence and appearance, a close resemblance to the substance of the brain of a child; hence the terms cerebriform cancer, encephaloïd tumour, and medullary sarcoma. Although, however, it be a fact that in the fungoïd disease, the solid part of the tumour often bears a striking resemblance to cerebral substance, we frequently find it on the one hand deviating into a much more firm material, and on the other into one of a softer and grumous consistence, It sometimes has a minutely foliated structure of a pearly white colour. When the diseased structure has completely lost its vitality, it breaks down into a variously discoloured pultaceous grumous mass, in which the remains of the membranes of the secondary cysts and their vessels may often be detected; although in a recently formed tumour, or in the newer parts of an older one, the traces of that mode of formation which has been sufficiently insisted on are abundantly evident. They are however very much lost or obscured as the process of decay advances. At times, therefore, it is difficult to distinguish them. When the tumour has only advanced to the stage of opacity,

its substance will be of a very uniform character, and the membranous parts not only very thin and tender, but adherent amongst themselves and to the contained substance.

The characters of cerebriform cancer are very much modified by the tissues in which the tumours are developed. Although it may not be necessary to attempt to particularize all these variations, it seems nevertheless proper not wholly to pass over the peculiarities which this disease exhibits when it affects the bones. When the fungöid disease takes its origin in a part of the osseous system, bony matter continued from the natural structure forms a striking part of the new growth, through which it often radiates from that part of the bone, or near which the disease commenced. The bone thus formed is of a loose or feeble texture compared with that of healthy bone. It would appear that the deposit of bony matter only takes place in that part of the tumour which is subjected to the pressure of the periosteum, which is often greatly distended by the growth of the tumour. Its fibres become separated by this distention, the morbid growth advances through the opening, and proceeds with increased rapidity, and soon loses all trace of bony deposit. It is not common for fungöid tumours to show any disposition to ossification, except when originating from bone in the manner just described. Nevertheless in some rare instances it is met with; but it presents very different characters from those which are at times observed to accompany true scirrhus. It is not, as in these last cases, the central and most compressed part of the tumour which forms the bed in which the earthy matter is deposited; but the cysts themselves become converted into bony shells circumscribing their broken-down contents. This phenomenon has been noticed in some comparatively chronic cases of this disease. It is probably very rare in this affection for the morbid growth to remain stationary for a sufficient length of time for the process of ossification to be carried on." Dr. Hodgkin's Paper on the Anatomical Characters of Adventitious Structures. Transactions of the Medico-Chirurgical Society, vol. xv. p. 265. In concluding this account of Dr. Hodgkin's theory, the author feels that he owes to that gentleman an apology for having availed himself of so much of the matter of his valuable paper. On having done so however he considers that he has not only greatly enriched the subject of his present article, but also that he has done the propounder of the theory more substantial justice than he could have done by abstracting from his essay a more general outline of its principles.

The reader may now perhaps be disposed to pause for a short time, and again place before his mind's eye the rival theories of Drs. Baron and Hodgkin, and ask or think of each, is it true? or of both, by reason of their striking analogy to each other, can they both be true? or is one true in respect to some forms of adventitious deposits, and the other in its application to other morbid developments? They both assume the existence of adventitious tissue antecedently to the commencement of malignant action. Where therefore is the disease generated? When

and where does it actually commence? Whence are its elementary constituents derived? Are they secreted by the actions of any natural tissues? A gentleman who ranks with the most eminent pathologists of this or any other country has recently glanced at these difficulties, and come to some conclusions of his own which would seem to be partially, at least, at variance with the positions of his predecessors. See Prof. Carswell's Illustrations of Pathological Anatomy, art. Carcinoma. That gentleman derives the origin of the constituent material of heterologue deposits from the BLOOD, in which he believes them to be antecedently present. Under the head of FORMATION OF CARCINOMA IN THE BLOOD, Dr. Carswell observes as follows :—"The presence of the heterologous substance which constitutes the several varieties of both species of carcinoma in the blood, is a circumstance of great importance, and unless it be clearly demonstrated to arise in consequence of a modification of the blood itself, in whatever manner produced, we should find it impossible to explain many of the phenomena which it presents, more especially those which accompany its formation in the molecular structure of organs and on the free surfaces of membranes. The following facts may be adduced as furnishing strong evidence that the formation of this substance takes place in the blood, whether it be found in this fluid alone, or in other parts of the body, at the same time: first, the presence of this substance in the vessels which ramify in carcinomatous tumours, or in their immediate vicinity; second, in the vessels of a portion or the whole of an organ, to the former of which it is exclusively confined, and can be traced from the trunks into the branches and capillaries; third, in vessels having no direct communication with an organ affected by the same disease, as, for example, when it is confined to a small extent of the vena portæ; and lastly, in blood which has been effused into the cellular tissue and on the surface of organs.

The divisions of the vascular system in which the carcinomatous substance has been observed are the venous and capillary;—a circumstance which may be ascribed to the contractile power of arteries preventing, under ordinary circumstances, the blood from accumulating, and consequently this substance from forming within them, and not to any peculiarity of function exercised by the former.

The appearances which the carcinomatous formation presents in the blood are very various, and sometimes perfectly similar to those which mark its presence in the substance or on the surface of organs. In large veins, such as the vena portæ and its branches, the emulgent vein, etc., it may present the lardaceous, mammary, medullary, or hæmatöid characters, all in the same venous trunk. These varieties of the carcinomatous formation may be found mixed together in minute quantities, or isolated into masses so conspicuous that we can readily distinguish them from each other. Sometimes they lie merely in contact with the internal parietes of the vein; at other times they are united to the latter by means of a thin layer of colourless fibrine; or minute

bloodvessels pass from the one into the other, and are often very numerous and remarkably conspicuous in the cerebriform matter.

The formation of these varieties of carcinoma in the blood cannot remain a matter of doubt to those who have had occasion to examine the appearances I have described. That the presence of an organized product in the blood can have no other origin than the blood itself, and that such a product cannot be introduced into this fluid by absorption or otherwise, are facts so obvious that I shall not give any further illustration of them.

From this view of the origin of carcinoma, its formation in the intimate structure and on the free surface of organs, after the manner of nutrition and secretion, follows as a natural consequence.

The material element of the disease is separated from the blood and deposited under a variety of circumstances, which modify in a greater or less degree the form, bulk, colour, and consistence of the deposits it afterwards presents in the several periods of its development. We cannot therefore limit the seat of this disease to any one tissue, nor ascribe its origin to any modification of structure or special organization, as has been done by several pathologists. Perhaps the most ingenious essay that has been made to explain the local origin of carcinoma is that of Dr. Hodgkin, published in the 15th volume of the Medico-Chirurgical Transactions. Dr. Hodgkin has endeavoured to show that the presence of a serous membrane, having a cystiform arrangement, is necessary for the production of carcinoma and some other heterologous formations. The existence of the former precedes, he believes, the formation of the latter; and consequently is at once the seat and origin of the disease. THAT SUCH IS THE MANNER IN WHICH CARCINOMA AND SEVERAL OTHER HETEROLOGOUS PRODUCTS ARE SOMETIMES FORMED I can have no doubt, inasmuch as I have seen them as described by Dr. Hodgkin. But there is here no new law in operation. Cysts are a very simple modification of a serous membrane; they partake both of its structure and functions; and consequently are subject to similar diseases. If therefore such cysts should exist in an individual having the cancerous DIATHESIS, they may, in the same manner as a natural serous membrane, become the seat of any variety of carcinoma. But although carcinomatous tumours such as those described are found contained in cysts, attached singly or in groups, and covered by a reflected serous membrane, these tumours may not and frequently do not originate in the cysts. They may form in the cellular tissue external to the cysts, and during their development project onwards, carrying before them as their common envelope the internal and serous lining of the latter. Such in fact is seen to be the origin of these tumours in most of the cysts represented by Dr. Hodgkin in the work referred to. They are situated externally to the cyst, and are placed in the same circumstances as tumours formed in the cellular tissue when no cyst is present.

As an objection to the general application of the cystic origin of tumours, it may be observed, that the presence of cysts in the liver, walls of the stomach,

lungs, kidneys, brain, lymphatic glands, spleen, and blood, is not to be detected at any period of the development of carcinoma; and therefore when they do occur in other organs, as the ovaries, testes, mammæ, etc., they must be regarded as a mere coincidence, or as a consequence of the disease, and not as a cause or necessary condition of it."

All heterologue formations, according to Dr. Carswell's opinion, have for their essential character a peculiar constituency of subject material, consisting in the presence of a solid or fluid substance, different from any of the solids or fluids which enter into the healthy composition of the body. "This substance," he observes, "presents such a marked difference in regard to one or more of the characters by which it is recognised, as at once to lead us to regard it as differing in its nature, and therefore constituting diseases of different kinds. It may resemble cartilage, brain, blood, the pigmentum nigrum, soft cheese, cream, an earthy concretion, or a stone; and hence, from the greater or less degree of resemblance which it bears to one or other of those natural products, it has been denominated scirrhus, medullary sarcoma, fungus hæmatodes, melanosis, tubercle, pus, and calculus. He accordingly imputes the striking differences observable among heterologue formations to no differences in the arrangement of original tissues, but to diversities of properties of that peculiar substance which constitutes the essential character of such formations. "Finding as I have done," he observes, "the essential character of heterologous formations on the presence of a substance which does not enter into the healthy composition of the body, THE SEVERAL KINDS OF THESE FORMATIONS may also be established on the same principle; the differences which they present being derived from certain characters which may be regarded as the type of each. They will thus form so many genera of which the species and varieties will be determined with greater or less facility according as they approach to or recede from that state which constitutes the distinctive character of the genus to which they belong." Our learned pathologist then proceeds to distribute heterologue formations under five genera, to which he gives severally the designations of carcinoma, melanoma, pyonoma, tyroma, and lithoma. Of these, the first, viz. carcinoma, embraces all the forms of diseased structure appertaining to our present subject. The genus carcinoma is divided by Dr. Carswell into two species, 1. scirrhoma, and 2. cephaloma. In the former of these, the morbid deposit has little or no tendency to become organized. "Its form and arrangement appear to be determined chiefly by external circumstances, and its formation and subsequent increase are entirely dependent on the nutritive function of the organ in which it is contained; whereas in the latter the deposit in question exhibits a greater or less tendency to become organized. Although it may at first assume a determinate form and arrangement, in consequence of the influence of external circumstances, it possesses in itself properties by means of which its subsequent arrangement and development are effected, independently of the nutritive function of the organ in which

it is formed, except in so far as the materials of its growth may be derived from that source.

In both these species of carcinoma, the heterologous deposit presents itself under various forms, which may be regarded as constituting so many varieties of each species.

The varieties of scirrhoma are determined chiefly by the relative quantity of the heterologous deposit, the manner in which it is distributed, and the difference of colour and consistence which it presents. Thus it may be collected in numerous points in the form of a hard, gray, semi-transparent substance, intersected by a dull white, or pale straw-coloured fibrous or condensed cellular tissue, and as such is commonly denominated scirrhus. When it assumes a regularly lobulated arrangement so as to present an appearance similar to a section of the pancreas, it forms what was called by Mr. Abernethy the pancreatic sarcoma. Again it may be disseminated uniformly throughout the texture of an organ, which it converts into a solid substance resembling a slice of raw or boiled pork, and is then called by the French the lardaceous tissue. Lastly, when it presents the appearance of firm jelly, and is collected into masses of greater or less bulk, in a multitude of cells, it is the MATIERE COLLÖID of Laennec, or the cancer gelatiniforme, or aréolaire of Cruveilhier.

The principal varieties of cephaloma are derived from the appearances which the heterologous deposit presents either in different organs or at different stages of its development. When it presents the appearance of firm coagulable lymph or fibrine, deprived of the red colouring matter of the blood, possessing a uniform fibriform or lobuliform arrangement, with a certain degree of transparency and vascularity, Mr. Abernethy gave to it the name of COMMON VASCULAR, or ORGANIZED SARCOMA. In this state the heterologous deposit is generally collected into a mass of greater or less bulk, in which few or no traces of the proper tissue of the organ in which it is contained are observable. If on the contrary it be uniformly disseminated throughout the texture of an organ, so as to transform it into a substance resembling a section of the mammary gland, or of the udder of the cow when boiled, the appellation of MAMMARY SARCOMA was given to it by Mr. Abernethy. When it presents an appearance similar in colour and consistence to the substance of the brain, it was called MEDULLARY SARCOMA by the same distinguished surgeon. The MATIERE CEREBRIFORME of Laennec, and SPONGÖID INFLAMMATION of Mr. Burns; THE MILK-LIKE TUMOUR of Dr. Monro, THE SOFT CANCER of various authors, and the PULPY TESTICLE of Dr. Baillie, are names which have been given to the same state.

Of the numerous varieties of cephaloma, the last is that in which the vascular organization is most conspicuous; and as the coats of the vessels with which it is supplied are remarkably delicate, the circulation of the blood through them is readily interrupted; hæmorrhage from congestive rupture takes place, and the effused blood is mixed in greater or less quantity with the brain-like matter.

From this accidental circumstance, together with the protrusion of the substance in question through the ulcerated integuments, in the form for example of a bleeding fungus, it has been described by Mr. Hey, and also by Mr. Wardrop, under the appellation of fungus hæmatodes. Sir Astley Cooper calls it fungöid disease.

The entire essay of Dr. Carswell, as far as it has hitherto gone, on the different forms and arrangements of diseases occasioned by heterologue deposits, is a work of extraordinary interest, containing illustrations of the principles which it propounds so numerous, so remarkable for their verisimilitude, so decisive of the facts which they are severally intended to prove, and so splendid as specimens of the art of design applied to pathological science, that nothing yet produced on similar subjects can be placed on a scale of competition with them. That the doctrine of derivation of the carcinomatous principle from the blood possessing such plastic power of self-extension and organization as are ascribed to it by this admirable writer, is perfectly true, or complete, or unmodifiable by future observers, and therefore FINAL, is more than the author chooses to venture to predicate. He is indeed aware that there is already engaged in similar investigations another English pathologist, of no ordinary talents; and he moreover feels assured that such investigations will, to say the least of them, greatly conduce to improve our knowledge of heterologous deposits, and of the laws by which they are produced. Is it too much to hope that they may eventually lead to the discovery of some latent principle or modification of action not yet observed or perfectly understood, and consequently to the establishment of a more complete theory of the formation of tumours than may perhaps be admitted at present to exist?

The uterus is probably subject to the invasion of carcinomatous action under all its forms. The author has seen examples of almost all the varieties of it just enumerated by Professor Carswell; but he considers it the subject of scirrhoma incomparably more frequently than to any other variety. It therefore enjoys no immunity from this form of malignant disease, as seems to be assumed for it by Dr. Hodgkin in the following passage:—"Since the fibres of the uterus rarely contract, excepting during parturition, we need not be surprised to find that the scirrhous tumours developed amongst them are very far from being similarly modified to those which I mentioned as being formed amongst the ordinary muscular fibres, as for instance in the deltoid or the masseter. To the little susceptibility which the uterus exhibits with respect to morbid actions, we may most probably attribute both its own immunity from the scirrhous affection, and the absence of constitutional taint." Medico-Chirurg. Transact. vol. xv. p. 332. This non-liability, or little susceptibility, of the uterus to the form of malignant disease in question, must surely be exceedingly overstated. Were the author to found his opinion as to this point on his OWN professional experience, which he acknowledges might not be a perfectly fair test of strict truth in such a case, it would be that women are as liable to

scirrhus of the uterus between the ages of forty and fifty, as individuals of either sex are subject to tubercular consumption of the lungs between the ages of seventeen and twenty-seven.

Medical practitioners are seldom consulted for scirrhus of the uterus during its first or indolent stage; and its existence is often a matter of presumption from facts collected during our earliest professional interviews with patients of this class when it becomes no longer doubtful that an insensible induration and intumescence of the uterus must have existed for many months, and possibly for some years, before the actual accession of the painful and inflammatory form of the disease. At other times we not unfrequently encounter already-developed scirrhosities of the womb during examinations instituted for other purposes; such scirrhosities being sometimes preceded by indistinct or anomalous symptoms of uterine irritation. It is indeed the opinion of some practical writers on cancer of the uterus, that it is almost always an effect of some irritating condition of the parts themselves concerned, or of immediately adjoining tissues antecedently. Of many such REPUTED CAUSES it would often seem exceedingly difficult to say whether and when they should be placed under the head of CAUSES, and not under that of effects of a pre-existing structural derangement of the uterus itself.

The development of the painful stage of cancer at about what has been called the critical age, is often indicated by an excess of sanguineous discharge during the menstrual period, or by an excessive frequency or irregularity of occurrence of such periods; whilst their intervals are occupied by discharges of a more morbid character, and although designated leucorrheal, consisting of all varieties of colours and consistence. These hæmorrhages and drainings are not unfrequently accompanied by a sense of weight and fulness of the hypogastric and inguinal regions, and also occasionally by aching pains about the sacrum and upper part of the thighs. The general health, however, is observed not yet to have sustained any material injury. Thus five or six months are usually suffered to pass without any remarkable attention being determined to the state of the uterus. In other cases an inconvenient sense of heat is felt at the orifice of that organ, and in others that of a peculiar pruritus extending, as it has been sometimes described, from the loins to the external genitals. About this period sexual intercourse becomes painful, and in many cases is followed by the escape of a few drops of blood. Moreover the orifice of the uterus is found to be in some degree dilated. The whole of the vaginal part of that organ will also be recognised to have attained an increment to its original volume, and its tissue to have become more solid and resisting. In many cases there is at the same time to be distinguished an eversion of the anterior labium, and in some few of both labia of the uterine orifice; and this is a circumstance which may be depended upon as an indication of the disease being genuine cancer of the uterus, almost as much as the lancinating pains which are universally admitted to be characteristic of it.

In the mean time these identical pains supervene. They are usually described as having the whole of the uterine region for their locality, shooting dartingly caross and in different directions throughout the affected organ; and as being propagated in many cases to the groins, hips, and upper parts of the thighs. They are of course exceedingly exasperated during the efforts which are almost always necessary to be made to evacuate the contents of the bladder and rectum, as well as by any considerable pressure applied to the hypogastric region. If the subject be comparatively young and plethoric, the hæmorrhages are more frequent and copious, and are apt to present themselves to a late period of the disease. In other cases, as when the patient is of a more advanced age, or has ceased for one or two years to have been the subject of the catamenial function, her losses of blood are usually less abundant, and appear so much to present themselves at regular periods as greatly to simulate menstruation. In a very short time, however, subsequently, the true character of the malady will be made manifest by the accession of the phenomena incident to the third or last stage of the disease.

The second or inflammatory stage of cancer at length terminates in suppuration, and thus the scirrhous tumour of many months or years' duration, is finally transformed into open and incurable cancer. When this important change takes place, it forms a manifest crisis in the history of the disease. Up to this period, the powers of assimilation and nutrition had remained moderately healthy, and the moral faculties had retained their wonted vigour. The entire economy is now destined to sustain a reversal of its previous state. The usual indications of a healthy and moderately full habit disappear. The patient's attitude assumes an expression of feebleness. The skin becomes of a dingy brownish paleness, and appears as if bereft of its natural smoothness and firmness, and as if detached from its corresponding subjacent tissues. Sometimes the face may be observed to be a little bloated or full, as if charged with more than its ordinary quantity of serous fluid. The great paleness of the complexion, the lank and tarnished appearance of the hair, and the spiritless aspect of the patient, constitute altogether an expression of countenance which no attentive observer can easily forget. About this time the appetite becomes greatly impaired. Harassing vomitings supervene, sometimes followed by diarrhea, and at others by a constipated state of the bowels. During the day the skin is for the most part dry and slightly harsh to the feel, whilst during the night, and especially towards the morning, it is drenched in a profuse perspiration.

As the discharge from the uterus becomes more ichorous and abundant, the prostration of the patient's strength becomes more and more marked, the pulse becomes more feeble and frequent, she enjoys less and less sleep, and upon examination being instituted, the extent of the ulceration and destruction of the tissues within the pelvis will be found rapidly extending. If the vaginal portion of the uterus was the part of it which was first the subject of scirrhus,

it will now be found entirely destroyed, in common with the whole of the cervix immediately beyond it, and possibly the greater part of the body. The destruction extends in all directions, so that soon after the annihilation of the vaginal portion of the womb, the vagina, even to its orifice, will be found implicated in the general devastation. In a very brief period of time subsequently to this result, the common wallings between the vagina and the rectum, and between the uterus and the bladder, are broken down, so as to expose the miserable patient to all the horrible consequences incident to the entire loss of control over the sphincters of the alvine and urinary passages. Enfeebled by her profuse and fetid discharges, harassed by her almost never-ceasing torments, and worn down to the last degree of emaciation by the usual alternations of a fatal hectic, she at length ceases to be conscious of her sufferings, and in a few hours afterwards expires. In a certain proportion of cases, death takes place at an earlier period than here supposed, and by the shorter process of one or more profuse hæmorrhages from the uterus.

The length of time during which the uterus may be the subject of scirrhoma, from first to last, is very uncertain. The state of indolent scirrhosity has existed for so many years as to have induced some pathologists to adopt the distinction, as applicable to this malady, of acute and chronic cancer. When it attacks a younger class of subjects, it is usually considered that the indolent stage, when once roused into painful activity, is more rapid in its progress through its succeeding stages of malignancy than when it first presents itself at a more advanced age; but it remains indolent for a longer period in the former class of subjects than in the latter.

The author was consulted about seven years ago by a widow lady for difficult micturition, which sometimes amounted to absolute retention of urine. She was thirty-six years of age at that time. On one occasion of this kind it became necessary to use the catheter. The instrument being unexpectedly impeded in its progress through the urethra, an examination per vaginam was had recourse to, in order to ascertain the cause; and the presenting part of the uterus was found considerably indurated and enlarged, but entirely without pain. The subject of the case had been suspended, as to her menstrual function, for nearly a twelvemonth before she consulted the author; and it is rather remarkable, considering the very moderately good state of health which she continues to enjoy, that it has never since been re-established. About six months ago, certain family circumstances made it necessary for her to leave London, and go to reside in a remote part of the country: but before she left, she felt anxious to know what might be the actual state of her uterine malady: the author found it precisely the same as on the first occasion of his being consulted for it. There was no further enlargement; there was no pain even upon the application of considerable pressure; and the only inconvenience which exists from the increased magnitude of the uterus is the mechanical annoyance which it inflicts on the bladder; but which the patient has long since been able to

mitigate by a dextrous self-use of the catheter. Notwithstanding the perfectly suspended state of the catamenial function, no inconvenience has been sustained by the presence of any vicarious discharge of any sort or kind.

It is well known that fibrous tumours are generally of a very indolent nature; whereas cases are numerously recorded of UTERINE tumours of that class which had existed for many years without lapsing into a malignant state, and without ever having compromised the general health. In the appearance of the section across a fibrous tumour, and of a similar section made across the body of the uterus in the state of indolent scirrhosity, the author has never been able to discover any appreciable difference. It sometimes happens that scirrhoma attacks, in the first instance, the body of the uterus. When that has happened, for it is rather a rare occurrence, it has been noticed that it had probably existed for a great length of time before its diagnosis had been satisfactorily made out. The proper explanation of this fact the author conceives to be, that the indolent scirrhus of the uterus is more liable to be roused at an early period of its existence into the next stage of its development, viz., the painful or inflammatory stage, when IT OCCUPIES THE ORIFICE AND NECK of that organ, which by their locality are especially exposed to causes of irritation, than when it affects ITS BODY, which by its locality is less within the reach of such influences.

The cerebriform species of carcinoma of the uterus is a much less painful disease in its more advanced stages than scirrhoma, but nevertheless more rapid in its progress, and equally certain in the fatality of its event. A principal variety of fungöid cancer was admirably described by the late Dr. John Clarke, about five-and-twenty years ago, under the designation of CAULIFLOWER EXCRESCENCE FROM THE OS UTERI. It being the first published history of the uterine disease in question, the reader will probably be anxious to possess it. It was published in 1809, in the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. iii. p. 321. "The object of the present communication is to give some account of a disease, NOT HITHERTO DESCRIBED, as far as I know, by any writer on the diseases of the female organs of generation, nor in any book on morbid anatomy, though it is very far from being uncommon. From its external form and structure in the living body, I have for many years been accustomed to describe it in my lectures under the name of THE CAULIFLOWER EXCRESCENCE OF THE OS UTERI; meaning to distinguish it from other diseases of structure of this part of the body, but especially from cancer, with which disease it has generally been confounded. Having been for many years much consulted about the diseases of the female sex, I have been led to observe that there is a great variety in the symptoms of diseases which pass under the common name of cancer. On accurately investigating, by examinations in the living body, the structure of different diseased parts, and connecting this with the variety of the symptoms which characterize cancer and some other diseases of the uterus, I consider myself justified in giving to it a new name, which is in some degree descriptive of its structure. Having very frequently met with the cauli-

flower excrescence of the os uteri, I was much surprised that I could find no specimen of it in any collection of anatomical preparations. I sought for it in vain in the collection of the late Dr. William Hunter. Moreover, there is no specimen of it in the collection made by Mr. John Hunter, now in the possession of the College of Surgeons; and in all my inquiries among those who had the best opportunity of finding it in the dead body, I have never been able to procure a specimen which I could add to my private collection, for the purpose of exhibiting it in my lectures. The reason of this will be satisfactorily explained by two cases which will be related in this paper. The cauliflower excrescence always arises from some part of the os uteri. As several of the early symptoms are not very distressing to the patient, the tumour in the beginning is rarely the subject of medical attention; the first changes of structure have therefore not been observed. I do not recollect that I have ever met with a case in which the size of the tumour was less than that of a blackbird's egg. At this period it has made an irregular projection, and has a base as broad as any other part of it attached to some part of the os uteri. The surface has a granulated feel. Considerable pressure applied to it, or handling it, does not occasion any sense of pain. The remainder of the os uteri will at this period be found to have no sensible alteration of structure. By degrees more and more of the circle of the os uteri, and the external part of the cervix uteri, become affected by the same morbid alteration of structure, until at length the whole is involved in the disease. The growth is in some cases slow; but in others so rapid, that in the course of nine months it will entirely fill up the cavity of the pelvis, and block up the entrance of the vagina. I learned this fact from the following case.

I was consulted by a young woman about twenty-six years of age, who was suffering under a profuse uterine discharge, the appearance of which made me believe that it proceeded from this disease. I was confirmed in this opinion by finding the whole pelvis filled with a cauliflower excrescence, so large as to impede the free passage of the fæces and urine. She appeared to be sinking fast under the quantity of the discharge. No statement was made to me of the probability of her being pregnant. As she did not reside in London, I saw her only a few times. About six weeks after my first visit to her she was suddenly seized with a pain in the abdomen, which, increasing in violence, a medical man in the village where she lived was sent for. Upon making an examination, he discovered a large tumour projecting from the orifice of the vagina. Having left the room for a short time he was hastily recalled; and on his return he found that the head of a child protruded. Soon after, the child was born; and in a short time the placenta came away. No unusual discharge following, it was supposed by those present, that no disease existed. In a short time, however, when the puerperal discharge had lessened, all the former symptoms returned, and I was again desired to visit her. On examination I found the excrescence filling up the pelvis as before. The discharge from it

became daily more profuse, and in six weeks after delivery she died in a state of the greatest emaciation. From the history of this case I am led to believe that the disease must have been formed after conception; both because she had no symptoms of disease nine months before her delivery; and because in the state of the os uteri attendant on this disease, it is not likely that conception should take place.

It appears that when she fell into labour, the tumour was expelled before the os uteri could be dilated for the passage of the child's head, and before it could pass through the pelvis. As soon as the child was born, it receded into the vagina, and no further examination was made at that time.

As the bulk of tumours of this class increases, the granulated structure becomes more perceptible, and is found to resemble very much the structure of a cauliflower when it begins to run to seed. In most cases it is of a brittle consistence, so that small parts of it will come away, if it be touched too rudely; and such pieces generally appear very white. Sometimes, though no violence has been used, small portions of a white substance come away with the urine of the patient, and in the discharge from the vagina. When the tumour has arrived at a size greater than the os uteri, it spreads very much; and as the base is the smallest part of it, persons not conversant with the disease have often mistaken it for polypus. A little attention, however, to the feel of the tumour, and the breadth of its base, will be sufficient to distinguish them.

In the very early state of the cauliflower excrescence, a discharge from the vagina takes place like fluor albus. It very soon becomes thin and watery, and is sometimes tinged with blood. In most cases, upon coming away it is apparently as thin and transparent as pure water; but the linen on which it is received becomes stiff when dry, as if it had been starched. The quantity of the discharge, when the excrescence is large, will sometimes be sufficient to wet thoroughly ten or twelve napkins in a day. Now and then a discharge of pure blood occurs: when this ceases, the discharge of a thin transparent fluid reappears. An offensive odour generally accompanies the discharge, which is greatest when there has lately been an evacuation of pure blood, or of the catamenia. Through the whole course of the disease, I have never found, in any instance, any appearance of pus in the fluid discharged from the vagina. Sometimes, however, mucus will be seen in it.

The catamenia are not affected in an early state of the disease. This discharge is, however, more abundant than in health, and the period is apt to last longer. With the catamenial secretion blood is very often effused. When the constitution becomes much weakened, menstruation is less regular; and in the last stages of the disease, it observes no regular period.

Patients labouring under this disorder are variously affected in respect to pain. In the commencement none is felt; but during its progress pain in some cases is experienced. Generally in advanced stages of the disease, the subject of it feels pain in the back and in the direction of the round ligaments of the uterus.

The pain is not described to be lancinating as in cancer, and is without any sensible aggravation by paroxysms: but on the whole it is most felt after the patient has been long in a perpendicular attitude. The disease attacks indiscriminately women of all ages. I have lately met with a case in which it proved fatal before the age of twenty-five years. The patient is destroyed by the debility occasioned by the profuse discharge; and, in the course of the disease, she always becomes extremely emaciated. That this depends entirely on the discharge, will appear from the consequences of the treatment pursued in a case hereafter to be described. I have never met with an instance in which the disease did not terminate fatally. As it seemed quite evident that the diminution of bodily strength in this disease is owing to the discharge, I had for many years wished for an opportunity of removing the excrescence by a ligature, to ascertain whether relief might be obtained by this operation; believing that it would not increase the danger of the patient. At length a favourable case presented itself about three years ago. At that time I was called upon to visit a patient who was supposed to have a polypus of the uterus. She had been very much weakened by a continual discharge from the vagina before I saw her, and was apparently sinking very fast. On examination, I discovered that there was a cauliflower excrescence of the size of an orange, growing from about one-third of the circle of the os uteri. The uterus above the tumour was enlarged. It was agreed in a consultation in a case so hopeless, to attempt the extirpation of the tumour by a ligature, which might be instantly loosened if any pain or other inconvenience should be produced by it. I accordingly passed a ligature round the base of it as near to the os uteri as possible. The patient was not sensible of any pain upon tightening the threads. I therefore left her with directions to send for me if she should be in pain; but I heard nothing from her. On the following day, finding the threads slackened, I tightened them. Still no pain was occasioned; but I found that the watery discharge had ceased altogether, and that a thicker had succeeded, which was small in quantity and very offensive. On the next day the ligature came away, proving that the tumour was divided at its base. I immediately examined the cavity of the vagina, but found no tumour there; and from the most strict inquiry, ascertained that nothing had passed from the vagina. I again examined the vagina with great accuracy, and found a small portion of white glairy substance, which might have been contained in half of the shell of a pigeon's egg. From this time she had no more watery discharge; and in a few weeks, from having been much emaciated, she regained a considerable degree of plumpness. After this, however, a purulent discharge occurred from the vagina. I saw her again, and found that the lower portion of the uterus was become diseased. The os uteri was irregular and knotted, and the interstices of the knobs were in a state of ulceration. To this state symptoms of irritation succeeded, and she died. The body was not examined after death.

I have since had an opportunity of inspecting, after death, the uterus of a

patient affected with the same disease, whom I attended many months. A few days before her death, the cauliflower excrescence was removed by my brother, Mr. Clarke, and it was then as large as an orange. She had suffered very much from a profuse discharge of watery fluid; and towards the conclusion of her life, a symptom occurred which I never met with, a loss of sight, without any apparent alteration in the structure of the eye. On examining the os uteri, the day after her death, no tumour appeared; and it was clearly ascertained that nothing solid had come away during her life. The body and fundus of the uterus were sound. From about the half of the os uteri hung a slimy, flaccid, white, and very tender substance, resembling the fœtal portion of the placenta of a graminivorous animal. It was desirable to ascertain whether it could be artificially filled, by injection, so as to restore its former size. The attempt was accordingly made; but it failed, from the injection escaping from every part.

On considering well, and comparing these two cases, it appears to me that the application of a ligature in the one case, and the death of the patient in the other, produced the same effect; that is, the supplies were cut off, and the vessels which had before contained the fluids collapsed and almost disappeared. If all cases of cauliflower excrescence are of the same structure, which from the similarity of the discharge there is reason to believe, the disease consists in the growth of a preternatural substance from the os uteri, which when touched feels like a solid substance, but when emptied of its contents collapses, so as to occupy but a small space. I consider that the circumstances which took place in the case where the ligature was applied, and the appearances, on inspection of the parts in the dead body, afford a satisfactory explanation why this disease is not found as a tumour in collections of morbid anatomy, and why it has not been described by any writer upon that subject.

In this paper I have taken no notice of the symptoms arising from mechanical pressure; because they are common to this disease, and all other tumours of the same magnitude occupying the same situation.

Respecting the treatment of this disease I can offer at present little satisfactory information. The disease being described, and distinguished from others, is something gained. All stimulating substances either in diet or medicine, seem to aggravate it by increasing the discharge; and no astringents internally given which I have tried appear to lessen it. The only means from which I have seen any benefit derived, is the injecting into the vagina three times a day a strong decoction of cortex granati, or of cortex quercûs, in which alum has been dissolved in the proportion of eight or ten grains of the salt to every ounce of the fluid. This has the double effect of lessening the quantity of the discharge, and rendering it less offensive. It is scarcely necessary to add, that the use of anodynes must be resorted to for the mitigation of pain, and that the occasional symptoms of suppression of urine and costiveness are to be released by the use of a catheter and mild laxatives. As an appendix to the above

Fig: 1.

Pl. XXIII.

Fig: 2.

W. Fawland del. et lithog.

Printed by C. Hullmandel.

very interesting paper, the writer subsequently forwarded to the same society the following case in the practice of his brother, the present Sir Charles Clarke. "Margaret Pole, aged thirty-two, the mother of eight children, discovered that she was pregnant in the beginning of the year 1810. From the commencement to the termination of her pregnancy, she had a constant discharge from the vagina, generally watery, but sometimes bloody, by which she was extremely debilitated. On the 1st of July she was taken with labour pains. The practitioner who was first called to her finding a large tumour in the vagina, in his opinion resembling the placenta, and the discharge being at this time very profuse, my brother was called to his assistance. When he arrived he found the patient perpetually vomiting, and having a pulse frequent and weak. On examining the tumour, he ascertained the structure to be that of the cauliflower excrescence. At this time the os uteri was not much dilated; but the discharge of watery fluid tinged with blood was very great. Early in the morning of the 3rd of July she was delivered, without the assistance of art, of a putrid child; and the placenta followed in the usual time.

On the 4th and 5th of July a great quantity of discoloured watery fluid came away; the abdomen became tender upon pressure, and much swollen. On the 6th, aphthæ appeared upon the palate, tongue, and inside of the cheeks. The vomiting had never ceased: she became gradually weaker, and died on the 7th of July. On examining the state of the parts after death, my brother found, upon slitting up the vagina, that the tumour had disappeared, although, in the patient's life-time, it had filled nearly the whole of its cavity. In its place was a bulky unresisting substance, very little firmer than mucus. An attempt was made to fill the tumour from the vessels of the uterus with fine injection; but the injected fluid always escaped from the vessels of the pulpy mass. The vessels of which this species of tumour appears to consist, are of a very tender texture, and soon become too putrid to bear the force necessary to be employed in attempting to fill them with injection. From the resemblance between this case and one described in the paper to which this is annexed, there is every reason to believe that the disease must have begun in this case also after the commencement of pregnancy."

It is more than once stated by Dr. Clarke, in the course of the above paper, that he had not been able to procure for his museum a specimen of the cauliflower excrescence, nor to meet with such a specimen in the possession of any of his friends. On this point the author has to remark, that although he has not himself been more successful in obtaining the actually excrescent part of the disease described by his late friend, there is at the present moment a preparation of a diseased uterus in the Museum of the University of London, from which there had been suspended within a few months of the patient's death a true cauliflower excrescence. The preparation here alluded to is represented by an excellent drawing from the pencil of Mr. W. Fairland, in pl. xxiii. of the present work. Fig. i. is a sketch intended to convey an idea of the state of the uterus when the

author first saw the patient; but it does not do it quite faithfully, as the excrescent part of that sketch produces the impression of a looser and more abundant vegetation than it was really felt to be. It is the second figure that represents the state of the preparation now to be seen in the Museum of the University. The subject of the case was an unmarried woman of about twenty-seven years of age, and was a patient of Mr. Symes of Leigh-street, Burton-crescent, now of Tavistock-square. When the author first saw her, she was in a moderately good state of health, but subject to a considerable discharge of a glairy fluid; which gave her much uneasiness; and more especially because she was under an engagement to be married. The tumour was of about the size of a smallish orange, and felt slightly scabrous and fissured. It was proposed to throw a ligature around its neck, and the suggestion was at first acceded to; but the attempt to do it proving difficult, and occasioning more pain to her by reason of the great contractedness of the os externum than she had anticipated, her resolution failed her, and the operation of extirpation was never performed. She died in about eight months afterwards in a state of extreme emaciation. In the case of Dr. Clarke's patient, on whom he performed the operation of extirpation of the excrescent part of the disease with much temporary benefit, we are informed that the pressure of the ligature was not felt, nor produced any other inconvenience. Dr. Clarke observes that patients labouring under this disorder are variously affected in respect to pain. In a case now under the author's professional care, was the subject of an operation by ligature for what she understood was called the cauliflower excrescence of the womb, nearly or about two years ago, and suffered what she describes to have been extreme torture, both during the application and subsequent continuous use of the ligature until the excrescent tumour fell off. The patient is an old lady of upwards of seventy years of age. The author has occasionally seen her for the last twelve months.

When he was first consulted, she was sustaining severe pain from retention of urine. Some of the previous facts of the case being reported to him, he considered it his duty to ascertain its then actual state by examination, both abdominal and vaginal. The hypogastrium was tumid and painful; and the particular feel of it, upon the application of pressure, was that of a strong elastic resistance, such as is usually given by an over-distended bladder. On examining the vagina, he there found a state of things which he has never encountered in any other case, either before or since. The inferior part of the vagina seemed to have been blocked up by a cluster of considerable size of roundish bodies, smooth and unctuous to the feel, and loosely connected together by shreds of filamentous tissue. In consequence of this obstruction he found it difficult to make his way to the uterus, which however he was able eventually to accomplish without producing any immediate dislodgment of the adventitious mass, which he then could feel to be loosely attached to it. After deliberating for a few moments he determined to effect the removal of all of it which he might be able easily to detach, and suc-

ceeded in bringing away what he presumes might quite fill a large breakfast cup. Having thus far effected his object, he withdrew into an adjoining apartment; as well to give the patient an instant opportunity of emptying the bladder as to examine at his leisure the peculiar structure of the diseased mass of which he had become possessed. In less than five minutes after this result, Mrs. M. was able, with the assistance of a little bearing-down effort, to void about three pints of an exceedingly offensive and deeply-coloured urine; without however being able entirely to empty the bladder; inasmuch as in the course of less than a quarter of an hour subsequently, upon finding that the bladder was somewhat distended, the author introduced a catheter and brought away about a pint and a half more. Since that time the patient has never required any assistance to evacuate the contents of the bladder, beyond the occasional removal of two or three accumulations of adventitious tissues, much smaller in volume than the one just described, from within the vagina. Of these several masses, the first was not only incomparably larger than any other, but was the only one that furnished a distinct evidence of an approximation of its constituent tissue to any of the known forms of natural organization in the human body. Accordingly, upon carefully examining that mass, it was found to consist of a bunch of bubs or pods, of various sizes between those of filberts and walnuts, each containing, within a membranous envelope of exquisitely delicate texture, a quantity of cetaceous substance, not unlike mutton suet; each possessing so much of individuality of figure and place as not to be adherent to any other, but all nevertheless connected by finely-spun shreds of filamentous tissue. After the removal of this extraordinary appendage to the uterus, for the author is quite sure that he found it attached, although not very firmly, to that organ,—he made as careful an examination of the parts within the pelvis as was in his power. Nothing like the usually projecting portion of the uterus into the vagina, commonly called os tincæ, could be felt. The parietes of what remained of the cervix uteri presented the impression of being much thickened, and in several places broken into deep fissures and inequalities; but not furnishing any evidence of their being possessed of even a remnant of sensibility. A portion which projected into the hollow of the vagina below, somewhat farther than any other, was removed from the part above it with some violence, viz. by dint of pressure between the finger and thumb. This proceeding was attended with no inconvenience whatever to the patient; inasmuch as, when it was taking place, she declared that she felt no pain whatever. Upon attentively examining that fragment of what undoubtedly before its removal was a part of the uterus itself, it was observed to present very few, if any, of the characters of an organized tissue. On the contrary, it had strictly the appearance of a homogeneous substance, without any vestige of a fibrous arrangement of texture of any kind. In short, it was positively animal gluten. After having washed it in cold water, its colour was lightish gray, its feel was slightly unctuous; but, like glue, it was semi-transparent; and when divided by pressure into

several portions, its surfaces of section were exactly like those of fragments of broken glass. The professional services now described were neither attended nor afterwards followed by any hæmorrhage from the uterus; whilst, moreover, they had the effect of greatly diminishing the amount of a profuse discharge of another kind, by which the strength of the patient had already been greatly reduced. The profluvium in question had consisted principally of serum, occasionally mixed with portions of a grayish ropy mucus, and always so far tinged with blood as to stain the linen of a dirty brown. This discharge had for many weeks before the removal of the adventitious mass, which had probably occupied the vagina for nearly a twelvemonth, been so profuse, as to have required a change, of from eight to twelve napkins on an average, in the course of twenty-four hours. But after the removal of that substance, the stillicidium from the vagina almost entirely ceased, and the patient improved rapidly in her general health. The original uterine tumour, the cauliflower excrescence part of the case, was removed by her ordinary medical attendant, with the sanction and in the presence of Sir Charles Clarke, rather early, as the author was informed, in the year 1832. The operation of the ligature the patient represents to have been attended with intense pain for many days: but the state of health was importantly benefited by it. The author was first consulted in May last year. In June she had so far recovered her health and strength that she was induced to go to Margate, and she performed her journey and voyage so well as to reach Margate without inconvenience. Her medicines during her residence at Margate were chiefly vegetable tonics, occasional aperients, and preparations of iodine, until the latter began to disagree with her. She used also injections of chlorate of lime in solutions of various strength two or three times daily, and in her own opinion with much advantage to her personal comfort; and she bathed in sea-water of the temperature of 94-95 every alternate day. She returned to town in October in possession, as it seemed from external appearance, and as was really the opinion of her friends, of vigorous health. Notwithstanding these flattering circumstances, the uterine mischief was making slow but sure advances. On her return to London it was ascertained that the putrid discharge had been gradually increasing during the two preceding months, although that circumstance had produced no diminution either of appetite or strength. At this time a second mass of adventitious formation was removed from the vagina. It consisted as in the former case of clusters of cetaceous bodies loosely connected together, and to the uterus by shreds of filamentous tissue, but not visibly included within an investiture of membrane, nor presenting as on that occasion any regular or determined form. The fair patient is still surviving and really enjoying a very moderate share of comfort. She is now again at Margate, where she has been about a fortnight, and again, as she confidently reports, improving in her general health. Before she left London in the second week of the last month, June 1834, it was considered right once more to ascertain the condition of the parts within the pelvis; when

the very verge of its orifice. No intercommunication has yet taken place between the vagina and either of its adjoining passages. Moreover the external perineum is also perfectly sound; nor has indeed any part of the surfaces inferior to the proper orifice of the vaginal passage sustained any solution of continuity. The patient complains occasionally of dull pains in the sacral and hypogastric regions. Sometimes these pains have been severe and even intense; but never of a lancinating character. She often sleeps for many consecutive hours; and when the habit of sleeping tolerably well is accidentally interrupted, it is again pretty easily and certainly restored by a moderate dose of opium; which however she is not often required to take for that purpose.

What is this lady's disease? It undoubtedly is no variety of scirrhoma, as distinguished by Professor Carswell in his late distribution of the species and varieties of carcinomatous affections. The patient has never experienced the kind nor amount of pain incident to the scirrhous form of carcinoma. The discharge also, although it has often been profuse in quantity, muco-serous in consistence, and therefore of course sufficiently offensive as to its fœtor, has nevertheless not been attended by the horrible stench peculiarly characteristic of scirrhomatous cancer. In the author's opinion there can be no doubt of its being an example of a variety of cephaloma, although at present it appears to have totally ceased to fungate.

It does not seem very improbable that certain varieties or stages of this same disease constituted the uterine fungi to which Levret gave the designation of VIVACES. Levret sur les Polypes de la Matrice et du Vagin, Mém. de l'Acad. Roy. de Chirurg. tom. iii. p. 588. M. G. Herbiniaux, Traité sur les Polypes de la Matrice, p. 38.

There is yet another disease of the uterus, which, by reason of its remarkable malignancy, has often been taken for cancer, but which essentially is a totally different malady. It consists in a very rapid softening and ulceration of the whole of the uterine tissue; for which reason it has received the designation of THE MALIGNANT ULCER OF THE UTERUS. See Clarke's Essays, p. 136. Baillie's Works, by Wardrop, vol. ii. p. 323.

Dr. Baillie gives the following succinct but comprehensive description of it. "It is not unusual for an ulcer to be formed in the uterus of a very malignant nature. This is most apt to happen in women at the middle period of life, or at a more advanced age; but it sometimes happens in women who may still be said to be young. The ulcer generally begins in the cervix uteri; and the uterus is at the same time somewhat harder and larger than in the natural state. It does not, however, grow to any considerable size. The ulcer spreads from the cervix to the fundus uteri, and it is not unusual to see the greater part of the fundus destroyed by it, the rest being changed into a tattered ulcerated mass. The ulceration is not always confined in its boundaries to the uterus, but sometimes spreads into the neighbouring parts, as the vagina, the bladder, and the rectum; making communications between them, and producing dreadful havoc." The

author once met with a case of this disease which appeared to destroy its subject in about three weeks from the commencement of the malady. The patient's age was thirty-two; she was of a sanguineo-lymphatic temperament. She had been several years married to an elderly gentleman; but had not been blessed with a family. During the latter three years of her life she had totally surrendered herself to habits of intoxication. About a fortnight before her death the author received an urgent request to visit her without loss of time; her case being represented as one of sudden and profuse hæmorrhage from the uterus. The vaginal part of that organ was found somewhat enlarged, and of a distinctly softer texture than usual, but occupying its natural situation. The source of the hæmorrhage was concluded to have been the posterior labium, because that part more especially presented to the examining finger a loose, softish, ragged feel; whilst the anterior labium was also soft to the touch, but smooth, swollen, and protuberant. The patient sustained two subsequent hæmorrhages, shrunk rapidly in flesh and strength, and died on the sixteenth day after the occurrence of her first hæmorrhage.

Appearances on Inspection of the Body after Death.—The whole of the vaginal part of the uterus had disappeared. The cervix had sustained so much softening and ulceration that its connexion with the vagina could scarcely be traced. The remaining portions of the organ were a mass of a fibro-parenchymatous tissue, with its interstitial spaces everywhere charged with laudable purulent matter. The remains of this uterus, together with another preparation illustrative of the ravages of the same disease, may be seen at the Museum of Anatomy of the University. In Professor Carswell's distribution of heterologous diseases, the malignant ulcer of the uterus, including the antecedent enlargement of volume of that organ, in consequence of being charged with a deposit of pus, as already stated, should be considered a variety of the class of heterologues to which that writer has given the designation of pyonoma. For a more extended description of this destructive malady, see art. Uterus, by Desormeaux, in the Dict. de Médecine, vol. xxi. p. 109.

Of the Treatment of Scirrhoma, and other Carcinomatous Diseases of the Uterus.—The inefficiency of the most vaunted remedies for the cure of cancer has been long notorious and proverbial; of some hundreds of specifics and other nostrums which have been celebrated for their efficacy in curing cancers, it is therefore quite unnecessary we should even notice more than a very few of such of them as have been recently employed, or are still used by practitioners of eminence. They may all be included under the several heads of mineral, vegetable, metallic, and miscellaneous preparations. The most frequently employed minerals have been those of antimony, sulphur, and arsenic. The muriates of barytes and lime have also of late years been occasionally made use of. It is worthy of observation that the greater number of them have been used both internally and externally. It is generally considered that a

poultice, consisting of one part of white arsenic to about twenty or five-and-twenty parts of linseed poultice, bread-and-water, or mashed carrot, forms as efficient an application to a foul cancerous ulcer as any that has been hitherto used or recommended. On the other hand, it has been strongly maintained that a carrot poultice alone has had the effect of cleansing and abating the fœtor of cancerous sores, equally with any combinations of demulcent poultices with arsenical preparations. The muriates of barytes and lime have been chiefly exhibited as internal medicines, and have produced their good effects, when they have produced any, in consequence of their constitutional influence as tonics. Preparations of sulphur and antimony have most frequently been employed in combination with other things, such as vegetable extracts, infusions, tinctures, etc.

The oxides of most of the metals have been exhibited as remedies in cancer; as have also some of their combinations with acids. Of this important class of medicaments, we should consider the carbonate of iron as perhaps the most useful. Justamond. Its principal efficiency as a constitutional remedy is probably to be ascribed to its influence as a stimulant of the digestive functions. For the same reason the sulphates of copper and zinc, and the oxide of gold, if the latter indeed can be supposed to have any power at all, see Dict. de Méd. tom. iv. p. 200, must be presumed to produce their good effect. Carcinomatous affections of the uterus being often the results, as many authors have supposed, of other diseases of the same or of adjoining tissues, it seems obvious that remedies calculated to relieve the cause might produce, temporarily at least, some salutary influence on its effects; whilst it is well known that cachectic diseases, even of tissue, are often greatly mitigated during the use of tonic remedies.

At one period it was a very common practice to commence the treatment of cancer of the uterus with the administration of mercurial remedies; of which calomel or blue-pill was exhibited internally; and blue ointment and corrosive sublimate, in different forms and strength, according to the object to be attained, both externally and internally. But it should be considered that, about the period alluded to, the diagnoses among certain diseases of the genitals were less clearly understood than they are at present, and that syphilitic ulcers were not unfrequently mistaken for carcinomatous affections of the same organs. However that may be, the author feels perfectly confident that no preparations of mercury have ever cured a single case of genuine cancer.

Combinations of some of the metals with the mineral acids, as in the case of the corrosive sublimate just noticed, and of nitrate of silver, are not uncommonly employed, even at the present day, as remedies for cancer; as also acetic acid, with lead, etc. It is scarcely necessary to notice the administration and application of alkalescent substances in supposed cases of cancer, on the principle of the theory which ascribed the origin and cause of cancer to the existence of a superabundance of acid in the system.

Among the hundreds of remedies for cancer derived from the vegetable kingdom, the five or six following may be enumerated as the most important mitigants of the extreme sufferings incident to that disease. They are, without exception, furnished by the class of narcotics, and consist principally of preparations of the poppy, henbane, deadly nightshade, the thornapple, hemlock, and foxglove. It is not necessary to go into the extravagant encomiums which have been passed upon these several narcotics, as remedies for cancer. They are all of them more or less soothers of pain and promoters of sleep; but they do not change the actions incident to the disease, nor can they be proved to promote the resorption into the system of the heterologous formations constituent of its cause and development. Of late years the tincture and other preparations of iodine have been introduced to professional notice, as possessed of incomparable deobstruent properties; and the author indeed believes that some kinds of swellings, the precise nature of which he does not take upon himself to define, have occasionally yielded to iodate remedies. But in cases of scirrhoma, or any other variety of carcinoma of the uterus, he is quite sure that in his own practice, where he has made extensive trials of them, their exhibition has been attended with no good effect whatever.

The heterologous conversion of structure which constitutes the essence of the malady under consideration, often precedes by many months, or even, as sometimes happens, BY MANY YEARS, the development of its painful stage. Assuming this part of the history of cancer to be a positive general fact, and it is attested by universal experience, it is obvious to a probable inference that the precise date of the development of such painful stage may often essentially depend upon the regimen, mode of life, absence of causes of irritation, and other circumstances of the patient. Accordingly it has been a strongly entertained opinion by some practical writers, that the accession of the painful stage of cancer might often be protracted for some years by rigid abstinence from the use of stimulant foods. The late Dr. John Clarke had a patient who lived eight years after she first consulted him for a scirrhus of the uterus. She was desired to live on vegetable food alone, and to take water only for drink. Her bowels were moreover kept constantly and somewhat freely open by very small doses exhibited daily of neutral salts. The carcinomatous action was thus so importantly checked and subdued, that the patient, when she died, appeared to sink under the effects of another disease. It frequently happens that the painful stage of scirrhus of the uterus is preceded by a sense of heat and irritation of the os uteri. That period might very conveniently be made available for the use of antiirritant measures, and such as might be expected to subduct from the heat and excitement of the affected organ. M. Alibert assures us that he CURED a woman, of thirty years of age, of a scirrhus of the uterus, by the use alone of frequent injections of cold water, continued for six months. Dict. de Méd. tom. iv. p. 199. For preventing congestion, and diminishing the amount of an already existing overfulness of the vessels of the uterus, it is manifest that a most im-

portant means will be found in an occasional abstraction of blood from the neighbourhood of the part affected, by means of leeches. To meet the same or a similar indication, the application of vesicatories to the thighs, groins, hypogastric and sacral regions, has been strongly and obviously very plausibly recommended by many writers. To reduce uterine irritation, or a supposed plethora, the author has for many years past confined himself almost exclusively to the occasional use of leeches, applied directly to the orifice of the womb, as already more than once described in the foregoing pages. He thinks that he has met with many cases in which the accession of the painful and ulcerative stages of the disease was put off for several years. Added to these measures, we should always be anxious to guard our patients against the effects of all local irritations, whether from functional irregularities or any other causes of sexual cachexy. It is in cases of this description that strong lotions, made with nitrate of silver, dissolved in distilled water, and used in the form of injections, have been supposed to produce beneficial effects in the cure of cancers of the womb. The constitutional health in the mean time being made the object of judicious professional treatment, it seems fair to presume, that patients might in this way sometimes escape the invasion of carcinoma, who otherwise might eventually be overtaken by it. But all useful treatment of cancer of the uterus, thus far considered, amounts to little more than what is strictly to be considered preventive practice.

Hence the disposition which has generally prevailed among surgeons, on whom has usually devolved the professional care of cancer patients, to seek a radical remedy for it by extirpation of the part affected, whenever it has been accessible to such operations of art. External tumours of a supposed carcinomatous character have been thus disposed of from time immemorial; but excision of any part of the uterus was never thought of as a cure of a carcinoma of that organ until it was suggested by the late Prof. Osiander, of Göttingen, towards the latter part of the last century, and by him performed for the first time on the 5th of May, 1801.

Many cases are recorded of inverted uteri having been removed, some by the ligature, and some by an amputation; but the removal of THE DISEASED PART OF A CANCEROUS UTERUS, leaving its fundus behind in a healthy state, and, as before, connected with its natural appendages, is essentially a very different operation from that which we find recorded by Wrisberg, in the eighth volume of the Göttingen Commentaries, and the many others of the same description which have been since performed. The subject of Dr. Osiander's case was a widow, and her situation was as deplorable as could be well imagined. The vagina was distended by a carcinomatous fungus of the orifice of the uterus as large as a child's head. The fungus was seized and brought low down in the vagina by means of Smellie's forceps: but in endeavouring to put a loop round the neck of the womb, the fungus broke off, and the bleeding was terrible. The young physicians and surgeons

and a few experienced physicians who were present, among whom Prof. Osiander quotes as a witness Dr. Althof, physician to the Elector of Saxony, advised him to give up the operation, because they believed the woman would not be able to undergo it after losing so much blood. But the patient herself begged that the operation once began should be completed, and encouraged the professor to continue it, to the great surprise of all who were present. But as there was no longer any of the neck of the womb hanging down into the vagina by which the uterus could be drawn towards its outlet, necessity, the mother of many inventions, suggested to the learned Professor the idea of pulling down the uterus, by passing threads through it with a needle, and securing it in this manner till the operation was finished. Crooked needles were immediately mounted with fine waxed pack-thread, and carried with great caution to the remotest part of the vagina, pushed through it, and through the body of the womb, and then brought out through the inner orifice of its cervical passage; for the neck of the womb, and its external orifice, were already destroyed by the cancerous fungus. In this way four threads, one from each side, one from before, and one from behind, were brought through, by which the uterus was gently drawn low down into the vagina, and kept fast as soon as it was near the external orifice. Prof. Osiander then introduced a strong Pott's bistouri under the fore-finger of the right-hand, and cut horizontally through the womb ABOVE the scirrhous part, as straight as if it had been divided out of the body, where he could see it. The part which was cut off was preserved in spirits of wine, and along with many other products of similar preparations was exhibited to the Royal Society. The bleeding for an instant was violent; but it was very soon stopped by a sponge saturated with a powder made with equal parts of alum, gum-arabic, and colophony, applied within the vagina. After the bleeding had ceased, sponges, dipped in a solution of sugar of lead and vinegar, were applied to mitigate the inflammation; and soon as matter was perceived on the sponge, suppurants were employed. Prof. Osiander, for this purpose, made use of a mixture of the extract of unripe walnut shells, with honey and red precipitate; which was introduced on sponges with great caution, so that the anterior part of the vagina was scarcely touched by it. When the discharge is very copious, the quantity of the mixture is to be reduced, and the red precipitate omitted; if inconsiderable, its quantity must be increased. The recovery after this operation went on so rapidly, with the assistance of tonics, especially the cinchona used internally, that the patient was able to leave her room in the third week of her convalescence. In the fourth week she was able to walk about wherever she pleased. Extracted from the Göttingische gelehrte Anzeigen of August, by Dr. Thomson, Professor of Military Surgery in the University of Edinburgh, and republished by that gentleman in the Edinburgh Medical and Surgical Journal, vol. xii. p. 286.

Since the date of the above operation the excision of a portion of the neck of the uterus has been practised some scores, or rather hundreds, of times, as

well in different parts of Germany as in France; and in the greater number of cases with the utmost TEMPORARY SUCCESS, as in cases of cancer similarly dealt with in other parts of the body. But experience unfortunately proves, that the cure has rarely been permanent, or indeed of any considerable duration.

"The duration of the cure is very different, as it is in every operation for cancer. One circumstance, the result of experience, is of great importance, namely, that neither during the operation, which is conducted with so much difficulty, nor during the subsequent treatment, has one patient hitherto died. Some of them died more than a year afterwards from other causes, as from apoplexia nervosa, dropsy, and the like; or the disease returned suddenly again from new causes, and became eventually incurable; others continued three years or more in good health." Prof. Thomson's Paper.

The principal operators in this department of surgery now in France, are Dupuytren and Lisfranc. The mode of operating is no doubt considerably improved since its first introduction by Osiander, and from the following account, recently published from a lecture of the latter surgeon, it would seem probable that its results are more numerously successful:—"Lauvariol, it is generally supposed, advised this operation in 1780. Osiander performed it with success in 1801, in the following manner:—Having placed the patient in a proper position, he traversed the neck of the uterus in two opposite points of its circumference, with curved needles armed with double threads: he then drew the uterus to the vulva by gradual traction, and removed the disease with the knife. M. Dupuytren has advantageously substituted the forceps of Museux for the thread and needle employed by Osiander. I shall now explain the process to which he gives the preference, it is the only one attributed to him in the Treatise on Operative Medicine, published under his inspection in the year 1832. The surgeon introduces a speculum into the vagina, and confides it to an assistant. This being done, he gently draws towards him with a pair of Museux's forceps held in the left hand, all that portion of the neck of the uterus affected with carcinomatous degeneration, and which he removes with a double-bladed knife, or with a pair of curved flat scissars, very long, strong, and sharp. These are to be held in the right-hand, and alternately carried upward on the sides and downward, turning their concavity inward, and making them act as much as possible on the sound parts beyond the limits of the disease. The inconveniences attached to this process are the following. In seizing the carcinomatous tumour, which is often very soft, it gives way, and the uterus cannot be brought down. M. Dupuytren moreover says that he cut, with several instruments, AS MUCH AS POSSIBLE beyond the limits of the disease. These expressions intimate that the totality is not always removed. The instruments which he uses, acting in a narrow space, rather by pressure than by cutting, give rise to violent pain. The cancer can only be destroyed piece by piece; hence the diseased tissues are lacerated at the bottom of a narrow speculum, where they are masked by the blood, which prevents us from

distinguishing them from the healthy tissues. This process then is only applicable to cases in which we are prevented from sufficiently bringing down the neck of the uterus, by adherences which may be formed. I have met with only one case of this kind.

M. Mayor, of Lausanne, has proposed to practise the ligature of the neck of the uterus with a porte-nœud and tourniquet invented by him. I merely quote this as a historical fact; for among the grave and numerous inconveniences attached to it, we have only to call to mind the accidents which arise, when the ligature unfortunately embraces a portion of the uterus in tying a polypus.

Messrs. Hatin and Colombat have invented mechanical instruments by which they remove the neck of the uterus. To reject these instruments, however ingeniously contrived, we have but to remember that their employment requires a painful dilatation of the vagina, that the vagina is often very voluminous, that it does not always ascend at equal points round the neck, and that sometimes the disease throws deep roots into the healthy tissues, etc.

Method of M. Lisfranc.—The patient is placed in the same position as for the lateral operation of the stone. A bivalve speculum is then introduced. This has the advantage of embracing the tumour better, and of putting the upper part of the vagina perfectly on the stretch; in which case the circular vaginal fold which might mask the neck of the uterus cannot be formed. The operator now cleanses the os tincæ, in order to assure himself better of the disposition of the parts, if it be necessary. The forceps of Museux, which are longer, stronger, and less curved than those generally employed, are carried up, and closed against the orifice of the uterus. As soon as the branches are sufficiently opened to seize if possible two points of the neck diametrically opposite, the operator pushes them gently over the parts to be purchased, at the same time that he fixes them in the tissue of the uterus. This manœuvre is necessary to enable us to follow up the ascent of the uterus; otherwise we might seize it too low down, or perhaps miss it altogether. The speculum is easily withdrawn, because the forceps pass into and find room in the space between its two valves. We are now to exercise slow and gradual traction on the uterus, in order to bring its neck below the inferior orifice of the vagina. It is unnecessary to observe that the traction should be made at first in the direction of the upper axis, and then in that of the outlet of the pelvis. But in order that the uterus should be more perfectly seized and brought down, and also that all the points of the lower border of the neck should equally project below, the surgeon must apply a second pair of forceps in a direction opposed to that of the first one. This manœuvre has another advantage. Whatever may be the tendency of the uterus to ascend into the abdominal cavity during the resection, the tissue maintained in situ may be divided either at the same or at different heights, according to circumstances. It is only by continuing traction for five minutes, or in difficult cases for a quarter of an hour, if necessary, that we can obtain a sufficient degree of descent. The surgeon now

carries his finger round the uterine insertion of the vagina, which is easily recognised by the presence of a kind of ring, above which he feels, on pressure, an empty space. He then confides the forceps to an assistant, placed in front of the pelvis. The operator himself is to the left of the patient. Having furnished himself with a curved bistouri, cutting on its concave edge, and clothed with lint up to an inch of its blunt point, he directs the assistant to elevate the forceps, in order to change the axis of the uterus, so as better to expose its posterior surface. By this means the limits of the disease are well seen, and the resection may be effected higher up. The surgeon now glides the left index finger behind the os tincæ, keeping the palmar surface towards the patient, and measures by it the height at which the incision is to be made. The bistouri is placed below this finger, which directs it, and serves as a point d'appui to it; while the assistant gradually draws down the forceps, and brings the other points of the uterine neck within his reach. As the disease may extend itself higher on one side than on the other, it becomes the assistant's duty to manage the forceps in such a way as to incline the lower extremity of the uterus in a proper manner, so that the whole of the diseased parts may be removed. He must also be careful to diminish the force of his traction as the incisions advance, or he may lacerate the tissues. The bistouri should be managed with a sawing motion, to avoid injuring the great labia, and to make the edges of the wound equal. The division is sufficiently difficult, from the great resistance of the tissue of the uterus. But in some cases the volume of the parts does not permit them to be embraced by the speculum; and the surgeon cannot employ that instrument; here he must introduce simple hooks on the index finger, and fix them either on the neck of the uterus, or on the most resisting points of the tumour.

It has been proposed to introduce certain instruments into the uterus which by a mechanical contrivance could be made to expand within its cavity, so as thus to become a means of bringing it down. I have never tried them; they produce a contused wound, which is not removed with the diseased parts, and which must expose the patient to the well-known dangers of traumatic inflammation. If a soft fungus existed, though of small size, the introduction of the speculum might give rise to a hæmorrhage, and thus render it impossible to see the neck of the uterus, in spite of injections to cleanse the ulcerated surfaces, etc. In this case it will be better to renounce the use of the speculum, and be guided by the ordinary principles of surgery. However, as the double-branched speculum may be supposed to have been already introduced into the vagina, its two leaves might be widely separated, so as to allow the fungus to become engaged in the upper part of the instrument without being rubbed. Dr. Avenal reports a case of this kind, which I showed at the Clinique of La Pitie.

A large tumour, ascending high up on the neck of the uterus, is not easily brought down through the vagina, and does not permit us readily to see its limits, or to attack it with certainty. In a case of this kind, which is a serious one

and which I have often met with, I divide the fold of skin and mucous membrane; which, as I have lately demonstrated, gives great extent to the perineum in its antero-posterior diameter. When cancer of the uterus has extended deeply into the neck of the organ, some surgeons, after having removed the superficial portions of the diseased parts, have usually employed cauterization; a means very dangerous and very rarely indeed attended with success. In such cases I thought of practising two semilunar incisions, meeting at the extremity. By this means I dissect away all the diseased parts from whatever depth of the organ, and have obtained very fortunate results. In fact, pathological anatomy had convinced me, contrary to the general opinion, that even in cases where the extent of the disease did not permit me to remove the neck of the uterus, the body of the organ was almost always healthy, if we except some slight tumefaction due simply to hypertrophy. I have shown preparations proving this frequently at the hospital. People shudder to think what violent pain this operation must occasion. But this is a vulgar error which it is important to remove. Although the uterus be very sensible in many circumstances, even to moderate pressure, nature has fortunately rendered it comparatively insensible to the blade of a cutting instrument. This is so true, that many women operated upon at La Pitie, thought the operation was not commenced when the whole neck had been removed. Moreover, we know that patients are seldom conscious of any pain produced by leeches when applied to the lower part of the uterus. Surgeons have usually been too much impressed with the fear of hæmorrhage as a consequence of the above operation, and have naturally accustomed themselves to have recourse immediately to plugging; and thus the uterus has been actually deprived of the power of ridding itself of the extra charge of blood brought into it by the irritation of the operation; and this powerful cause of inflammation, joined to the pain occasioned by the presence of the plug, has often given rise to a fatal metro-peritonitis. When the woman has not been reduced by previous hæmorrhage, it has therefore been my practice to allow the blood to escape, and not to attempt to arrest it, until fourteen ounces shall have been discharged. In following this rule, I have not been obliged to plug more than six times in ninety-nine operations; and, moreover, the plug has generally been applied to the lower part of the vagina only, and withdrawn in one or two hours. I have never lost a patient from hæmorrhage; while three only have died in consequence of metro-peritonitis. The nervous accidents attendant on the operation are indeed truly frightful to a practitioner who sees them for the first time; but they are not dangerous: after a few hours they are followed by a calm, and are removed by an anti-spasmodic julep. The absence or sudden suppression of the bleeding is usually accompanied by pain within the pelvis. In such a case I remove the clots contained in the vagina, and throw up warm emollient injections. If the blood begins again to flow, the pains usually disappear: if not, I cover the lower part of the abdomen with a poultice, sprinkled over with laudanum, and practise a revulsive bleeding of the arm.

Metro-peritonitis, when well marked, is to be treated according to established rules.

A small revulsive bleeding from the arm is also the best means of combating the successive discharges of blood which may occur either with or without uterine pain.

As soon as all danger of hæmorrhage shall have been removed, it will be found advantageous to inject into the vagina a small quantity of mallow-water, nearly cold; in order to remove any clots of blood which may remain, and which are known to putrify with great rapidity.

The wound in the uterus is not favourably circumstanced for quick cicatrization, because it is constantly bathed in fluids more or less irritating; because the depression of the uterus exposes it to be rubbed against and injured; and because its organization does not permit its edges to come into contact: hence arises a pellicle of cicatrization which covers a large surface, and requires a long time to be perfectly formed. The injection first of emollient and then of stimulant fluids, absolute rest, and the cauterization of the wound with the liquid proto-nitrate acid of mercury, should be employed according to the indications. Six or eight applications are necessary to obtain a complete cicatrization of the wound.

It is an important point of physiology that the presence of the neck of the uterus is not indispensable to the existence and due consummation of pregnancy. In general, labour is more easy after its removal by this operation. In ten patients who had become pregnant after the operation, one only was delivered at four months; but she had been guilty of imprudences capable of producing abortion under any circumstances. I am permitted to mention the name of Madame Carpentier as one of the subjects of this operation, who has since carried two children to the full period of gestation. Amongst the great number of women operated upon, I know only of one in whom the cicatrix has completely obliterated the orifice of the uterus. She, however, menstruated regularly, and in the ordinary quantity; but each period was preceded and accompanied by severely painful symptoms. The menstrual discharge was furnished by the surface of the vagina. This woman died. On examining the contents of the pelvis after death, we found engorged within its cavity some lymphatic ganglia, a chronic abscess under one of the psoæ muscles, no metritis nor peritonitis: but it was quite evident that the lower orifice of the uterus was obliterated. The introduction of a probe from time to time might possibly have prevented this accident. Could it be remedied by the trocar or bistouri? Experience must decide the question.

In drawing this subject to a close, I have merely to remark, that of ninety-nine females on whom I have performed the operation of section of the neck of the womb, fifteen are dead and eighty-four are cured. In the former, the disease was very considerably advanced. We may confidently hope, that as our knowledge of the subject becomes more accurate and more extended, sur-

geons will be induced to operate sooner, and that thus the chances of failure may become considerably reduced. Published from the French Gazette of June 20, 1834, in the English "Lancet" of the 28th of the same month.

The operation just described, and so frequently performed on the continent of Europe, is little known in England. We are, however, aware of its having been performed in this country, with at least temporary success, some three or four times. But why is the practice discontinued? Is there any reason for believing or hoping that more absolute and permanent cures could be effected by the removal of PARTS only of carcinomated uteri, those for example exclusively implicated in the disease, than we find are accomplished by the extirpation of the WHOLE of the female breast under similar circumstances? M. Lisfranc more than once refers to relapses which had occurred in his practice on this subject. Did THESE form any proportion of his eighty-four cases of cures? It is to be reasonably presumed that many cases of scirrhus of the uterus must present themselves even in French public practice where it might be inexpedient to perform the operation of a resection of its cervix, over and above those which, from the impossibility of effecting the removal of THE WHOLE of the diseased part, should forbid its use. What are the circumstances which principally influence the decision of French surgeons in the choice of their subjects? Is it ever their practice to perform the operation before the accession of the painful stage of the disease? If not, it is exceedingly important that the profession should be accurately informed of the proportion of final and permanent recoveries; seeing that distinct information on that subject would eventually lead to correct conclusions on many most interesting practical questions incident to the pathology of cancer. Is the operation under any circumstances a defensible one? Does it ever save life or lengthen its duration? Is the life so saved or prolonged, so far capable of the ordinary enjoyments of existence, as to make it worth the sufferings and anxieties by which it must be purchased? Seeing that this capital operation has excited so much professional interest in France and Germany during the last thirty years, and it seems undeniable that it has been many times performed in those countries very beneficially to its subjects, is it not matter of surprise and even of regret that it has not occupied more of the attention of English surgeons than it appears hitherto to have engaged? One reason for this neglect is, no doubt, that the Continental surgeons have not been sufficiently precise and explicit in the description of their cases, and that they have too frequently omitted to follow up their descriptions beyond the more probable periods of susceptibility to relapses.

OF THE TREATMENT OF SCIRRHUS OF THE ORIFICE OF THE UTERUS BY CAUSTICS.—M. Bayle ascertained by numerous dissections, that in the earlier periods of ulcerations of the orifice of the uterus, the contiguous parts of the cervix, at the distance of two and three LINES from the degenerated tissue, were perfectly sound and healthy in their texture. This fact suggested to him the

Fig 1.

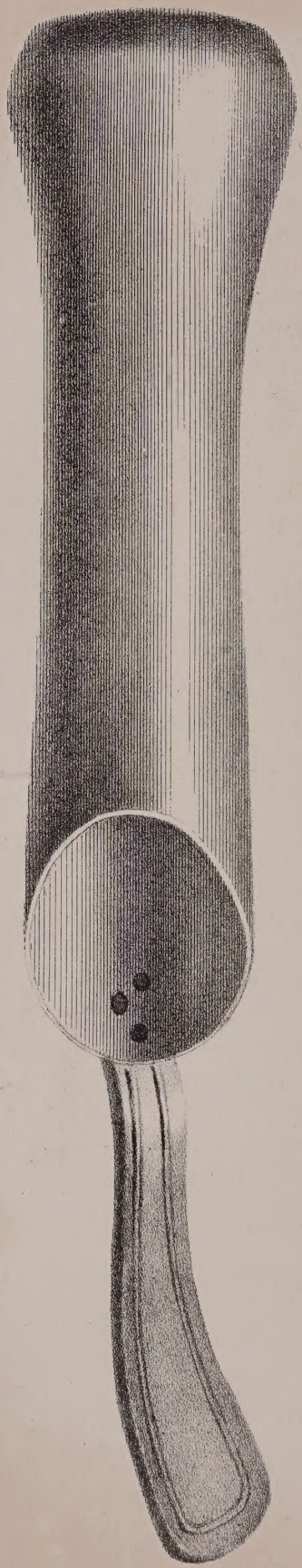


Fig 2.

W. Fairland lithog.

London. John

Fig. 4.

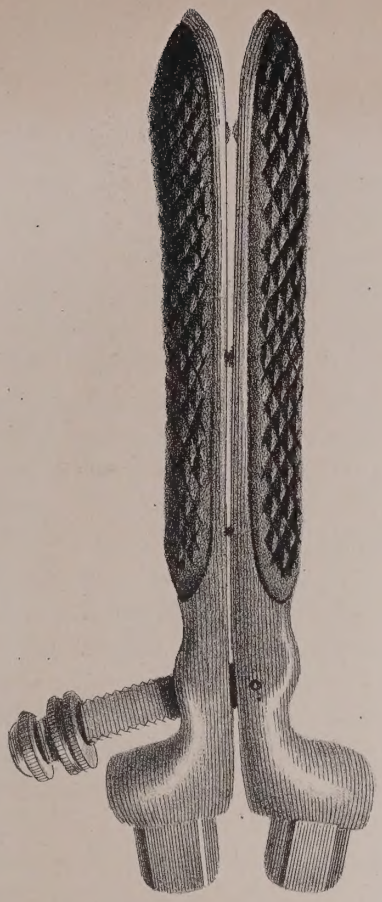
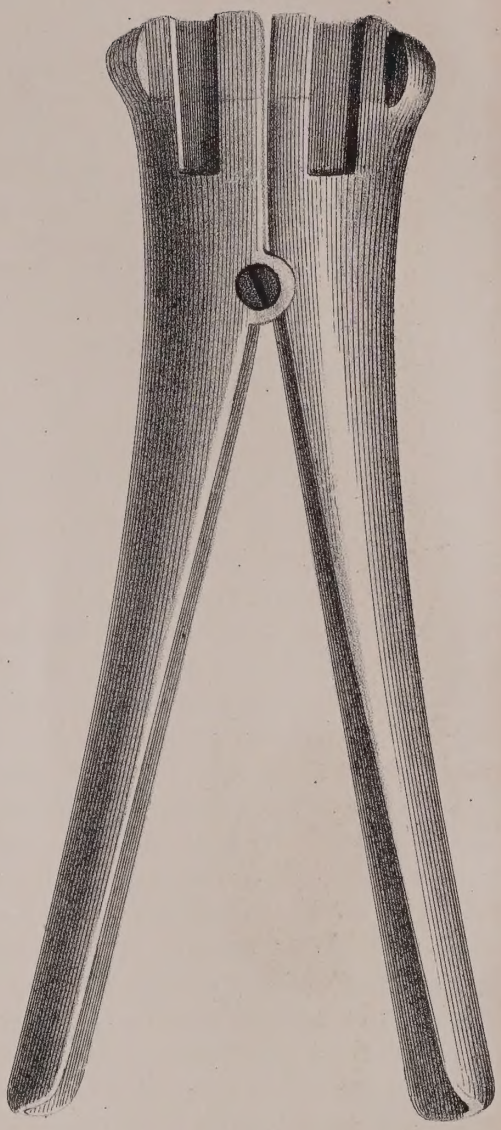
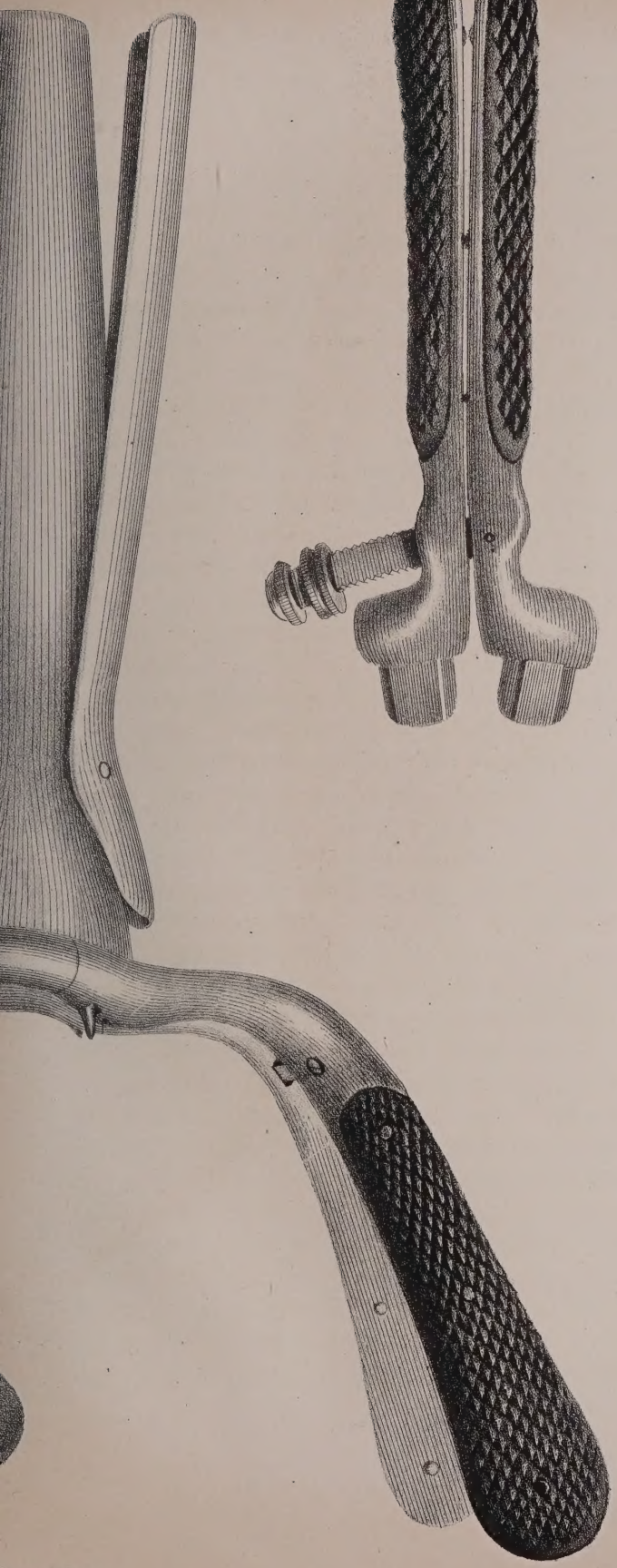


Fig. 5.





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application to the ulcerated part of an arsenical paste similar to what has been used with advantage in cases of noli me tangere of the face. Even before the period here alluded to, or at least before the facts were made public by M. Bayle, Dict. des Sciences Médicales, Dr. Recamier, physician to the Hôtel Dieu at Paris, had been in the practice of directing a variety of remedial substances to be applied to the ulcerated orifice of the uterus. But that skilful physician had not at that time ever ventured to apply caustic to it. His subsequent invention of an ingenious instrument, to which he gave the designation of speculum uteri, furnished him with the opportunity of having recourse, without danger, to the energetic practice recommended by M. Bayle. Dr. Recamier, when engaged in these pursuits, forwarded for publication the following history, drawn up for that purpose by M. Leperrey, a house pupil of the Hôtel Dieu. It only relates the principal facts of the case. Madame S., aged forty-three years; of a sanguineous temperament; of considerable embonpoint; regular as to her catamenia; the mother of fourteen children; was confined of her last child about four years ago; she had always enjoyed good health, and all her labours had been easy and prosperous. In the year 1816, that is, about two years after her last confinement, she became the subject of a fœtid discharge; which was not however accompanied by any suspension of her menses. In the commencement of the month of December 1816, Dr. Recamier was consulted. The patient had hitherto experienced no pain. On the application of the taxis, a tumour of the size of an egg, with an unequal surface, soft and pediculated, was found situated on the anterior labium of the orifice of the uterus. Dr. Recamier considered it to be a cancerous fungus. Three days afterwards, M. Dupuytren made a similar inquiry, and was of the same opinion. Messrs. Dubois, Boyer, and Pelletan, were respectively consulted afterwards, but each gentleman singly. They all however concurred in the same opinion as to the carcinomatous nature of the tumour. MM. Recamier and Dupuytren united in the advice of having it extirpated, as a means, if not of curing the disease, at least of prolonging the patient's existence. This operation was performed on the 15th of December 1816 by M. Dupuytren. The patient was laid across her bed. Two assistants took charge of her inferior extremities, which were separated from each other and bent at the breech and knees; a third assistant applied pressure with the hand upon the hypogastrium from above downwards. M. Dupuytren, with a pair of Museux's tooth forceps, seized the vaginal part of the uterus, brought it down to the vulva, and, with a pair of curved scissars, effected the removal of the tumour. The adventitious growth consisted of a soft fungus, of a cerebriform character. The section seemed to have passed through a tissue which appeared to have been sound, although perhaps somewhat more homogeneous than the neck of the uterus usually is. After having been kept in spirits for some time, its present size is that of a pullet's egg. The upper part of it being of a cerebriform substance, presents the consistence of soft jelly. After the operation, there escaped a small quantity

of blood; but the hæmorrhage was arrested easily by an injection of vinegar and water. No important symptoms succeeded to the operation, and the patient was convalescent on the eleventh day subsequent to it. Some time afterwards, in the sequel of a caustic having been applied to the right leg, there appeared a vast deposit on a part of the thigh, accompanied by a bilious fever, which confined the patient to her bed. In about a month her menses reappeared, she recovered her embonpoint, and she returned to her usual habits. In the month of April 1817, a tuberculous growth, of a cancerous character, of about the size of a walnut, was found projecting from the posterior labium of the orifice of the uterus. M. Dupuytren effected its extirpation, and the patient again returned to her ordinary occupations. In May 1818, it was ascertained that new vegetations were presenting themselves on the posterior labium, which together formed an unequal lobulated fungous growth of considerable size. Dr. Recamier conceived the idea of attacking it with caustic. It was then that he invented the instrument already alluded to, by means of which he furnished himself with the opportunity of actually seeing the parts affected, and of carrying his caustics above them, and of guarding the surrounding parts against their action. This instrument is very simple, and perfectly meets its indications. It is a sort of metallic tube (M. Recamier's was made of white metal), consisting at different parts of different diameters proportioned to the amplitude of the vagina. The uterine extremity is cut across perpendicularly, and finished off with an everted rim or border, which will be readily understood on looking at the plate where it is represented. The other extremity is cut off obliquely, in such a way as to furnish a convenient purchase of it to the practitioner, by which he will be able to hold it fixed and in one position, while he has to apply his caustic to the part affected.

Dr. Recamier made the first application of his cautery towards the latter part of the same month of May 1818. The parts intended to be made the subject of the application having been brought distinctly within the reach of the eye, the operator introduced his porte-crayon, armed with nitrate of silver. Before he withdrew the speculum, he took care to leave the cauterized surfaces covered with lint, in order that the caustic should not injure the sound parts. The pains were not acute during the application of the caustic. Emollient injections were ordered to be passed up in the course of the day. No material inconvenience was sustained during the succeeding night. On the second day, the patient resumed her occupations. In order to favour the falling off of the eschar, the cauterized surfaces were covered over with a little dressing of honey of roses and extract of hyoscyamus. In about eight days all the eschars had fallen off, when a new application of the caustic was made. On this occasion the accompanying pain was more acute, and it lasted for three hours. Fifteen applications of the caustic were thus made at intervals of about eight or ten days. During these applications of the caustic no derangement of the menstrual function occurred, nor did the patient sustain any abatement of her general health.

There yet remained to be destroyed a smooth roundish enlargement of the base of the anterior labium, projecting about an inch beyond its natural level. Twelve applications of the caustic sufficed to effect that object. Some further applications became however necessary to complete the removal of a small portion of indurated tissue, which only remained.

In this way the whole of the neck of the uterus was eventually removed. The use of the caustic during the latter part of the treatment was carried so far as even to have reached the inferior limits of its body. In four months from the commencement of the treatment, the whole of the tumour was completely removed, the healed surfaces presenting the characteristic appearance of neat and simple cicatrization. Dict. des Sciences Médicales, tom. xxxi. p. 240.

Bearing reference to the above case, the author would observe, that the removal of carunculous growths, tuberculous and other excrescences, might often be effected more conveniently by caustic than by the knife or the scissars. In almost all cases where the knife might be most conveniently used, but objected to on the part of the patient, the same object might be attained, if not so speedily, certainly as effectually in the end, by the potential cautery. Again, in cases where it might be difficult or impossible to obtain an easy or fast purchase of the vaginal part of the uterus, for the purpose of bringing it down to the vulva to undergo some further operation, the treatment by cauterization might be most advantageously substituted in many cases.

In the majority of cases of true scirrhoma, the author is much inclined to the opinion that neither the practice by excision, nor that of extirpation of the diseased part by caustic, can be depended upon as an absolute and final remedy for cancer. If, however, by either of these resources of our art the painful stage of a malignant disease can be anticipated, or put off by a timely removal of parts more immediately implicated in the danger of becoming speedily the seat of open cancer, it is manifestly our duty to take the benefit of the one or the other as the variety or stage of the disease may specially indicate. Moreover, it has occasionally happened that the removal of scirrhoid indurations of portions of the uterus has proved finally remedial as to any subsequent developments of the disease in the substance of the uterus itself.

The learning of this subject is so absolutely worthless as to its application to practice, that the author thinks it would not serve the interests of his readers to close the present article, agreeably to his usual practice, with a list of references to authorities.

# CHAPTER X.

## OF THE DISEASES OF THE LATERAL APPENDAGES OF THE UTERUS.

OF THE DISEASES OF THE FALLOPIAN TUBES.—The fallopian tubes being as it were parts by structure and function of the uterus itself, are for the most part subject to the same diseases with that organ. Their parietes, consisting of several varieties of tissue, as bloodvessels, lymphatics, muscular fibres, an investing serous membrane, a mucous lining membrane, an abundant supply of ramifications of nerves, we might naturally expect the fallopian tubes to be frequently the seats of inflammation and its consequences. Morbid anatomy has furnished evidences that inflammatory affections of these tubes have been almost invariably attendants or consequences of SUPPRESSED CATAMENIA AND LOCHIA. There are moreover few cases of peritonitis, whether during the puerperal state, or at any other time, which are not attended in the female subject by inflammation of great intensity of the fallopian tubes. This state of things is generally very clearly indicated by the presence of the usual pyrexial symptoms, viz. heat of skin and especially of the hypogastric integuments; much pain of one or both of the iliac regions, exasperated by pressure, contact, or by motion of any of the contiguous muscles; deficient secretion of the kidneys, and sometimes difficult and painful micturition; the small quantity of urine voided presenting the appearance of being deeply tinged with blood. It is to be presumed that inferior degrees of inflammation of those passages often terminate in cohesion of their internal surfaces, inasmuch as anatomists perpetually encounter examples of imperforate fallopian tubes in their daily practice of dissections of those parts. Such degrees of inflammation may be supposed sometimes to accompany the intense pain incident to the more violent cases of dysmenorrhea. Cohesion of these surfaces may also attend and succeed to chronic inflammation of the uterus, from whatever cause. The practical pathologist has frequent opportunities of seeing diverse forms of enlargements of these tubes in actual juxta-position with chronic inflammation of the body of the uterus. Acute inflammation of the fallopian tubes is sometimes seen to terminate in a sort of rapid sphacelus; and then their interior passage is seen charged with dark grumous blood. But the more frequent termination of acute inflammation of them is that by suppuration. This is what is most generally met with in cases of peritonitis of the puerperal state. Mrs. Bedford became the subject of inflammation of the left fallopian tube, at an advanced period of gestation. She was seen only by a

female whom she had engaged to attend her in her confinement. Some hours after the accession of her labour she became deadly faint. The late Dr. Sims was sent for, and arrived just in time to see her die. Mr. Foster, late surgeon to St. Thomas's Hospital, and the author, were requested to inspect the body. The left fallopian tube was found enlarged to the size of a child's arm, and containing about a pint and a half of a mixture of purulent matter and coffee-ground coloured grume. Portal, Cours d'Anatomie Médicale, tom. v. p. 540, quotes a case from De Haen, of an abscess of one of the fallopian tubes which contained eighteen pounds of pus. The subject, aged thirty-four, experienced a quartan fever, after which she experienced a suppression of her menses. Soon after, a tumour appeared in her left iliac region, which gradually increased in size. Her case was taken for one of ascites, and the operation of paracentesis was performed upon her, by which twenty-four pounds of a gelatinous matter was evacuated from the hypogastrium. In the progress of the disorder severe pulmonic symptoms were developed, and the patient died hectic. On inspection of the body after death, it was manifest that the true seat and origin of the malady had been inflammation and suppuration of the left fallopian tube.

The fallopian tubes have sometimes been found entirely obliterated. Haller. Element. Phys. vol. vii. p. 108. Sometimes they are seen enlarged by scirrhous, steatomatous, and bony deposits. Sandifort, Obs. Anat. Pathol. n. 58. iv. 64. Baader, Obs. Med. Anat. 1763. The veins moreover of these bodies seem much disposed to varicose enlargement. Their extremities both uterine and abdominal are liable to be obliterated; whilst their interior passage intermediately may retain its permeableness. In such cases their mucous lining secretes in some cases an excessive quantity of a thickish viscid fluid, by which they become distended and greatly enlarged. This constitutes one of the varieties of dropsy of the fallopian tubes. But proper dropsy of these tissues consists in deposits of a watery fluid; and of these there are at least three varieties: viz. 1. Those in which the fluid effused is contained within hydatids, attached but not adherent to, nor forming essentially part of, the tubes themselves; 2. Those in which it is contained intermediately between the peritoneal tunic and the tube; and 3. Those in which it is found effused into the cavity of the tube, and there retained by both its extremities being hermetically closed by disease. Of these varieties of dropsy, the two former may be considered as common to all parts consisting principally of cellular tissue. They are also almost always complicated with abdominal dropsy. Any of these forms of hydropic deposits must be presumed competent to disturb the functional offices of the genitals; whilst the last must seem totally and permanently subversive of them. Portal cites from Municks, the case of a woman who had been the subject of a prodigious enlargement of the abdomen for a period of eighteen years. On inspection of her body after death, not a drop of fluid of any kind was found within the abdominal cavity; but the right fallopian tube, which formed an enormous cyst, and of whose parietes the thickness was not less than half a finger's breadth, contained a

quantity of fluid which was conjectured to amount to upwards of a hundred gallons. On its external surface were seen adherent a great number of hydatids. There was also a tumour of the right tube ; but it was of a fungöid cartilaginous character, and contained purulent fluid. Harder, Apiar. Obs. xxv., speaks of a woman in one of whose fallopian tubes were found encysted a hundred and forty pounds of an aqueous fluid. Similar histories are recorded by De Haen Rat. Medend. vol. vi. Tulp. lib. iv. Lieutaud. Anat. Méd. obs. 1603.

"I have seen," says Dr. Baillie, Wardrop's Baillie, p. 360, "a hard round tumour growing from the outer surface of one of the fallopian tubes. This when cut into exhibited precisely the same appearance of structure as the tubercle which grows from the surface of the uterus, consisting of a hard white substance, intersected by strong membranous septa. This, however, I believe to be a very rare appearance of disease. The symptoms which attend the different morbid changes of the fallopian tubes are at present not known ; and they must from the circumstances belonging to them be very difficult to ascertain."

Of the Diseases of the Ovaries.—The ovaries are subject, in common with the uterus and fallopian tubes, to inflammatory affections of various degrees of intensity. Inflammations of these organs have also been known to exist independently of any similar condition of the uterus itself. M. Portal asserts that he had often met with patients of this class who had experienced all the pathognomonic symptoms of inflammation of the uterus, but who, after the lapse of some time, and subsequently to their apparent recovery, became the subjects of fulness, and in fact of very great intumescence in one or both iliac regions, for which they took various remedies without advantage. On inspecting the bodies of such persons after death, he found the uterus perfectly healthy, whilst the ovary of one side, and in other cases of both sides, together with the ligament or ligaments, round and broad of either or of both sides, presented the appearance of great engorgement. This inflammation is always accompanied by heat and pain, together with more or less tension of the groin and iliac region, corresponding with the locality of the affected organ.

In ovarian inflammation the contiguous broad ligament being more or less engorged with blood, the patient will experience a sense of vascular fulness and throbbing of that part also, and seeming to be propagated even to the loin and thigh of the same side, and there accompanied by a dull feel of rigidity and pain. Such a state of things must beexpected to produce symptoms of general pyrexia during the inflammatory stage, and those of absorption after the commencement of the suppurative process.

Inflammations of these organs are sometimes so intense as to involve their whole tissue, together with any other that may be immediately contiguous to them, in one common and rapid destruction. Such cases are quickly fatal, and are generally the effects of great mismanagement. More frequently inflammations of the ovaries present a doubtful and mixed character. See a case of

this description recorded by Lieutaud, Hist. Anat. Méd. part i. obs. 1494. A woman, aged forty, the subject for many years of a disease of the chest, had a tumour of the hypogastric region, which extended to the umbilicus. She bore it for a long time without much inconvenience. It nevertheless eventually terminated in her death. A body somewhat larger than a man's fist was found in the lower part of the abdomen, which had the effect of displacing the intestines. It proved to be the left ovary. It presented many distinct lodgements of purulent matter.

Sometimes pus is found to occupy the whole of the interstitial spaces among such portions of tissue as may yet remain; whilst in other cases the whole substance of an ovary may be seen reduced into a mere shell or cyst of peritoneum, charged with purulent matter. See pl. xxvii. E. "I have sometimes seen ovaries of the size of a child's head full of pus," observes M. Portal. "This pus is sometimes slightly grumous and whitish, especially when the engorgement of the ovary has had its source in steatomatous infarction." Now, in this latter case, the suppurative process takes place so insensibly as scarcely to be preceded by any pain; whereas, that which takes place in consequence of inflammation of the ordinary tissue of the part, is usually accompanied by very acute symptoms. It sometimes happens that the purulent matter, when formed in profuse quantities within the substance of ovaries, may have the effect of charging their attenuated parietes to such a degree as to cause them to give way; their contents being allowed to escape into the abdominal cavity. A woman aged sixty had sustained a severe indisposition. Ten years before her change of life she became the subject of a tumour in the right iliac region. At first it was of moderate size, nor was it very hard as to its consistence. It however increased both in hardness and volume until it arrived at the size of a child's head. It remained stationary at that stage of development for a considerable time; but it increased again, and then went on again increasing, until it acquired its ultimate volume: it became softer also to the touch. The right inferior extremity of it first became enlarged, and subsequently the left. This was followed by an effusion of fluid into the abdominal cavity, which had the effect of somewhat increasing its volume. At length an infiltration into the cellular membrane of the body followed. The kidneys performed their functions feebly. The lower part of the abdomen became greatly developed; although to a late period of the disease the ovarian tumour could be distinguished by the taxis. There supervened a slow continued fever, and the patient died. On inspecting the body after death, there was found generally an infiltration into the cellular membrane, without however any accumulation of a WATERY FLUID in any cavity. But in the pelvis there was observed to be about a pint of purulent matter, of a grayish hue, and a great number of sebaceous whitish concretions. The right ovary also contained some of these bodies, and we discovered in parts of it some steatomatous indurations. The rest of its substance was destroyed. Its peritoneal envelope was very large and very thick,

and almost of cartilaginous consistence. It was open in two places; and it was doubtless by these openings that the pus which it had contained had escaped. The left ovary was something more voluminous than is natural to that of a woman of sixty; and it was of a cartilaginous, or rather of a scirrhous, hardness. It is a fact, that ovarian tumours frequently and principally consist of steatomatous deposits. In some cases steatomatous substance is indeed exclusively congested within these organs; whilst in other cases it is found at the same time obstructing the maxillary, the axillary, inguinal, mesenteric, and other glands of the body. It seems probable that the several constituent materials which go into the composition of ovarian tumours are subject to changes and modifications of their peculiar forms; insomuch that a pultaceous substance may assume the character of suet, and that the suetty form of degenerescence may soften to a resemblance of honey; and that this latter may finally degenerate into a state of more or less perfect purulency. These changes would appear in a certain proportion of cases to be so slow, that some women have been known to have been the subject of them for many years, and even to extreme old age, without being materially inconvenienced by them. Nevertheless, compound ovarian tumours are to be considered as preludes to infiltrations into the lower extremities, and eventually to general dropsy. Steatomatous enlargements of the ovaries may be of such a volume as not only to qualify them for occupying the iliac regions painfully; but also by incroaching on other viscera, that of the greater part of the whole abdominal cavity. This fact might be illustrated by the citation of numerous examples. But the following case, briefly stated by Portal, will suffice. "Madlle. Argant bore, for many years, a tumour in the right iliac region, without its being attended by bad symptoms. She arrived at the age of thirty-five or thirty-six, without experiencing any diminution of size of her tumour, which therefore at that time had acquired an enormous volume. Her catamenia had been suppressed for some months when I was requested to visit her. She had an obscure fever during the day, which became greatly exasperated at night. She was moreover harassed with a small dry cough, which exasperated the fever. A colliquative diarrhœa supervened, and the patient soon sank into a marasmus which speedily destroyed her. On opening the body, the right ovary was found larger than a man's head, and very hard. It was full of steatomatous bodies of different densities and colours, and it weighed thirty-five pounds. The tumour was adherent to the peritoneum as far as the liver, and it sank deeply into the iliac cavity. The uterus was inclined, with its fundus looking towards the left right side of the pelvis, as was also the bladder. The left ovary was something less in size than a small apple, and packed into a pretty firm consistence. Certain indurated portions of the lungs appeared to me to present the character of steatomatous substance, which made me conclude that if our patient had not been the subject of this intumescence of her left ovary, she nevertheless would have been destroyed by pulmonary phthisis, a disease which proved fatal to her brother in about two years afterwards." Whilst these affections of the ovary

remain in an indolent state, and without pyrexial accompaniments, little can be offered in the shape of treatment. When roused by any unforeseen circumstances, or by the development incident to the lapse of time, into a state of irritation, the patient should be directed to place herself on a reduced allowance of food, confine herself to a vegetable diet, and abstain from the use of all vinous, spirituous, and fermented liquors. If plethoric, it might be advisable that she should lose blood in quantities sufficient for the present relief of local congestion. The iliac region of the side affected might afterwards be treated by a repetition of blisters, and by friction with blue ointment sufficiently, mildly to affect the mouth. The iodine and its usual compounds should not be omitted as a last resource.

The ovaries are the seats and subjects of ENCYSTED DROPSY. The dropsy of these organs varies according to the part of their tissue which becomes the seat of the effusion; for sometimes the fluid is contained immediately within their external covering, without having penetrated in any degree into the proper substance; at other times the fluid is seen to accumulate into the interior of their parenchymatous tissue, whilst in some cases these two forms of morbid deposits are found combined in the same subject. Cases of each of these varieties have probably equally been characterized by enormous collections of fluids into their respective reservoirs. Writers have given figures and weights of all amounts of value to represent the quantities of morbid fluids, which they have found effused in different cases of the disease, between forty and eighty pounds and upwards. The volume of an enlarged ovary has always been found to bear a more or less direct proportion to the quantity which it was subsequently discovered to contain. Ovaries are accordingly described as being of the size of a child's head, or as forming a tumour ample enough to occupy the whole abdominal cavity, etc. A case is described in the Edinburgh Transactions of ovarian dropsy which formed a tumour of sufficient amplitude to fill, together with the other viscera of the abdomen, the whole ventral cavity, and afterwards to propel the diaphragm into the thoracic cavity to the level of the third rib. In the greater number of dropsies of the ovaries, the parietes of the cysts containing the fluid, instead of becoming thinner by distention, acquire a great accession of thickness, and also a degree of density almost equal to that of cartilage. Moreover many of those tumours, after having arrived at a certain degree of development, have given way to the pressure bearing upon them, so as to have discharged their contents into the abdominal cavity, and to form a species of dropsy analogous to ascites, which has usually quickly proved fatal. A lady who died, the subject of great enlargement of the right ovary, was for the last ten months of her life exceedingly harassed by the following symptoms, viz., frequent sickness and vomiting, violent intestinal disturbances, diarrhœa, hæmorrhöids, discharges of blood by the rectum, jaundice, difficulty of breathing; descent of the uterus, from being weighed down by two lateral tumours with its volume diminished by compression. This delapsion of the uterus was imputed to relaxation of the vagina, and elongation of its natural supporters the ligaments. Fluid, in

considerable quantity, which could be easily fluctuated, was found distending the hypogastrium. The right ovary was full of steatomatous concrete, of the size of a large melon. In the middle of this tumour there was a cavity which contained upwards of two pints of a gelatino-purulent fluid, which communicated by two apertures with the cavity of the abdomen. The latter cavity contained twelve quarts of a mixed fluid, of which the principal part was of aqueous consistence.

But the most remarkable variety of what has been usually designated dropsy of the ovaries is the ENCYSTED FORM OF IT. In this disease the tissue of the affected organ is converted into an indefinite number of separate cells or cysts. It is not necessary to go into a minute description of their morbid anatomy in this place, see Dr. Hodgkin's Theory. The disease is ordinarily one of very gradual progress. Its characteristic cells or cysts may occupy the interior of the ovary, or the peritoneal sac which invests it, or have its seat with the parenchymatous tissue intermediate between these parts. The encysted fluids of ovaries thus diseased, are of all manner of colours and consistence. Sometimes they are red or black, like grume; sometimes they are semi-coagulated, like gelatine. In some places their contents are limpid and fluid, like water; occasionally their parietes are semi-cartilaginous; in parts we have deposits of steatomatous matter, in others masses of bony structure often organic, as portions of jaw-bones, teeth, etc. See plates xxvii. and xxvii. B. Masses of cetaceum, curiously mixed with hair. In some cases the entire ovary seems to be converted into one huge cyst. See plate xxvii. E, where is shown membranous parietes of a large cyst, after the escape of the fluid which it contained. The small oval figure is an anomalous tumour within the cyst. The large figure on the left page, pl. xxvii. D, shows the ordinary appearance of cysts forming the structural peculiarity of this disease. The cells in fig. 1, 2, 3, pl. xxvii. F, laid open to show a variety of such tissues of less frequent occurrence. The small letter e in fig. 1, indicates a dropsical enlargement of the fallopian tube.

Dropsy of the ovaries is often followed by general dropsy either of the thoracic or abdominal cavities; but more frequently that of the latter cavity, to the formation of which the affected ovary furnishes a direct supply of fluid. "Dropsy of the ovaries cannot be detected at a very early stage of the disease. But when it has made considerable progress, so as to have formed a swelling at the lower part of the abdomen, it may commonly be ascertained by an accurate examination and attention to the history of its growth. The tumour is generally more on one side of the abdomen than on the other, according as the right or left ovarium is the one affected. There is often an inequality in the surface of the swelling, and an obscure kind of fluctuation is felt on striking with the hand the parietes of the abdomen which cover the swelling. The health is commonly very little affected by this disease; and it is slow in its progress; so that life will often be continued with tolerable comfort for many years. The quantity of the

urine is sometimes but little diminished, and the absorbents of the ovarium are hardly capable of being excited to a vigorous action by medicine. There have been few instances therefore of a dropsy of the ovarium being cured." Dr. Baillie's Works, by Wardrop, p. 354. The principal indication of treatment would appear to be to obviate accidental symptoms incident to the development and local encroachments of the disease. It has been proposed to remove the affected ovary by an abdominal aperture; a section being made through the abdominal parietes for that purpose. In the paragraph just quoted from Baillie's Works, it is expressly stated that dropsy of the ovarium cannot be ascertained in a very early stage of the disease. If however the existence of the disease cannot be ascertained, it must appear a very fool-hardy practice indeed, to make a section of the abdominal parietes where there might be even a remote chance of failure on this point. Such a failure however happened a few years ago in the practice of a military obstetrician in Edinburgh. At a more advanced period of the disease there is another chance of an opposite tendency to be incurred, viz. that of a contraction of adhesions between the peritoneal surface of the diseased ovary and the peritoneal investments and linings of other parts and viscera of the abdomen; which might render it impossible to ensure in the event of such an operation an easy or even a safe detachment of the surfaces mutually adherent. It is unfortunately the fact, that cohesion of the encysted ovary takes place ordinarily at an early period of its morbid development; and in some cases where little or no activity of the disease had been suspected. If then it be true, that "the health is generally very little affected by this disease," and that it is so slow in its progress that life will often be continued "with tolerable comfort for many years," without any operation, and without interference of any kind, there are no judicious practitioners who would be induced to recommend a hazardous operation, and still fewer patients who might be induced to submit to one as a matter of pure experiment.

There is however another operation of surgery which is sometimes performed with great advantage as a measure of temporary relief in cases of ovarian dropsy at an advanced stage. The use of the paracentesis is therefore simply to protract life for a season, and by mitigating the painful difficulty of carrying on its movements during its remaining modicum of two or three weeks or months longer, to permit the harassed victim to sink more peaceably to her grave. This operation is therefore not only defensible, but absolutely required to be performed as an act of common humanity; and in many cases it has been beneficially repeated many scores, and in a few some hundreds of times.

The author cannot pretend to recommend any medicine possessing an adequate curative power over ovarian dropsy. There is no known deobstruent which can be expected to demolish the immense fabrics of heterologous architecture which constitute at once the genius and the material of the disease. We know of no greater deobstruent than mercury; but in no stage of develop-

ment of this disease has mercury ever appeared to exert the slightest influence over this malady. On the other hand, might not mercury be expected to exert an influence over the natural tissues and functions of the body, which might eventually contribute to quicken the morbid activity already engaged in the development of these heterologue formations? Preparations of iodine and its compounds may also, for what the author knows, deserve to be ranked among deobstruents. But in no case of encysted dropsy have they appeared to him to have been exhibited with the slightest benefit to the patient. The indications of treatment of encystic dropsy of the ovaries are therefore extremely few and simple; consisting first in measures of judicious regulation of the general health, with a view to the retardation of progress of the developments incident to the disease: and secondly, in mitigation; by small bleedings; local rubefacients; tapping when unavoidable; administering to the regular action of the bowels; the judicious use of opiates to conciliate sleep; and such mild tonics as may sustain the appetite and mildly uphold the spirits until the end shall come. The reader may consult the following references for some of the most curious cases which have hitherto been recorded upon the subject of the disease. Case of ovarian dropsy in a subject both of whose parents had died of pulmonary consumption. Corvisart's Journal de Médecine, etc. tom. xiii. p. 326. A case of ovarian dropsy; the tumour contained innumerable cysts, which contained others of inferior size. Corvisart's Journal, tom. xvi. p. 9. A case of so prodigious enlargement of the affected ovarium, that on the post-mortem examination it was found to weigh fifty pounds; its first enlargement was imputed to the influence of a moral cause. Corvisart's Journal, vol. xviii. p. 360. Another case, well described in homely language by Mr. John Paisley, surgeon at Glasgow; the whole contents of the diseased ovary measured six English gallons and a half. Edinb. Essays and Observations, vol. vi. p. 296. Dr. Monro's cases, very interestingly told. Edinb. Essays and Obs. vol. vi. p. 298. A case briefly but well detailed, by Mauriceau, tom. ii. Append. obs. 2, p. 2. Case of tuberculated tumour of the right ovary, containing encysted fluid. Leroux's Journal, tom. xxxiv. p. 227. The above case was communicated by Gastillier, a surgeon of considerable reputation in his time. He was the reporter also of the following case. The right ovary contained six litres of fluid. Leroux's Journal, tom. xxxiv. p. 235. Encysted dropsy, accompanied by a displacement of the uterus. The fallopian tubes were parties in the hydropic affection of this case. Communicated by M. Voisin, surgeon in chief of the Civil Hospital at Versailles. Sedillot's Journal Gén. de Médecine, tom. xvii. p. 371. A case of ovarian dropsy, which had the effect of producing retroversion of the uterus, communicated by M. Merat, M. D., Journal Gén. de Méd. tom. xlvii. p. 310. A case of ovarian dropsy, communicated by Mr. Martineau, of Norwich, to the Royal Society. The disease began to appear soon after a miscarriage, when the patient was in her twenty-seventh year. She first underwent the operation of tapping in 1757, and afterwards had recourse to it four or five times

a year until her death, which happened in 1783. In that space of time she was tapped eighty times, and lost 6631 pints of fluid. On dissection, the left ovarium was found enlarged into an immense pouch. The peritoneum was thickened, and in some places ossified; an illustration, in the opinion of Mr. Martineau, of the provision occasionally made by nature for the preservation of animals by thus securing parts, which if suddenly rent might prove fatal; whereas collections of matter are always allowed to make their way out of the body. London Medic. Journ. 1784, vol. v. p. 315.

Many interesting cases of encysted dropsy of the ovaries are recorded in the German Miscellanies and Leipsic Commentaries. The following may be referred to as among the most important: Ephem. Germanic. dec. i. an. 9 et 10. p. 54; dec. ii. an. 1. p. 187; dec. ii. an. 2. p. 238; dec. ii. an. 5. p. 430; dec. ii. an. 9. 1690. p. 171; dec. ii. an. 9. p. 234; dec. ii. an. 10. p. 66; dec. iii. an. 6. p. 167. Comment de Reb. in Scient. Nat. et Méd. Gest. vol. iii. p. 657; vol. iv. p. 622; vol. vi. p. 687; vol. viii. p. 697; vol. xii. p. 282; vol. xv. p. 102; vol. xviii. p. 14; vol. xx. p. 282; vol. xxiii. p. 114; vol. xxxvii. p. 243.

The following are references to cases in journals and other miscellaneous works:

A case of dropsy of the left ovary which contained 112 lbs. of serum in several cysts of different sizes, in the instance of a widow of about fifty years of age, by Dr. Henry Sampson. Lowther's Abridgment of the Philosoph. Transact. vol. iii. pp. 211 and 212. Another case communicated by Dr. J. Douglas; quantity of fluid 16 or 17 gallons. Jones's Abridgment of Phil. Trans. vol. v. p. 294. See also Reid and Gray's Abridgment, vol. vi. p. 62. A case of ovarian dropsy successfully treated by paracentesis by W. Newnham, of Farnham. Medical Repos. vol. iii. p. 280. Three cases of ovarian dropsy successfully treated by bleeding and blistering in the beginning. Medic. and Chirurg. Journ. vol. ii. p. 451. A case of dropsy of the ovary cured by an operation, by Dr. R. Houstoun. "The disorder has been the result of violence used by a midwife in the forty-fifth year of the patient's age, and she was now (1701) fifty-eight. Her abdomen was grown to a very great size, and she was obliged continually to lie on her back, which had produced excoriation, and rendered her situation very deplorable." The reporter of the case "made an incision in the abdomen of four inches in length. A gelatinous substance however immediately presented and obstructed the aperture. By means of a strong fir splinter, he drew out about two yards of this gluey substance, of which THE BREADTH WAS TEN INCHES, which was followed by nine quarts of such matter as is found in steatomatous tumours, together with several hydatids of various sizes, containing a yellowish serum; of which the least was larger than an orange. Several large pieces of membrane, which seemed to be parts of the distended ovarium were evacuated by the same orifice. He stitched up the wound in three places, and covered it with a pledget, having some of Lucatellus's balsam spread upon it, and with compresses steeped in French

brandy. The patient was next day considerably better; and in three weeks, Dr. Houstoun having been obliged to leave her till that time, found her, when he saw her for the first time after his return, out of doors. She lived in perfect health till 1714, when she died, after an illness of ten days' duration. Reid and Gray's Abridgment of Phil. Trans. vol. vii. p. 196. See also an interesting communication by Dr. Thomas Short. Martin's Abridgment of Phil. Trans. vol. ix. p. 150. A case of supposed dropsy of the fallopian tube cured by the operation of paracentesis. It was blood only that immediately followed the operation; "but a tent being introduced, a limpid fluid to the amount of some pounds was afterwards discharged: the wound was kept open for the space of three weeks; and it then healed. The leg of the affected side, which had become greatly swollen by an effusion of watery fluid into its cellular membrane, was restored to its proper size by the application of bandages. The patient got quite well, conceived again, and in due time was happily delivered." Tho. Bartholin. Act. Medic. vol. i. p. 194. an. 1671, 1672. Hafn. 1763. A case of ovarian dropsy which subsisted for fifteen years before it destroyed its subject. The circumference of the abdomen across the navel, before the body was opened, measured six feet and eight inches; and the puncture with the trocar furnished two hundred and fifty pounds, French weight, of a clear, limpid, inodorous fluid. Journ. de Médecine et Chirurg. etc. tom. xxxi. p. 530. A case of ovarian dropsy which had subsisted for six years, accidentally relieved by a muscular effort. "About this time the patient made an effort to lift up a great weight of potatoes. During the exertion, she experienced the sensation of something bursting within her hypogastrium. Consequent on this result, there immediately escaped a quantity of a limpid, watery fluid, which was followed by a speedy subsidence of the abdomen. In fact, a distillation from the genitals continued, until the abdomen was completely emptied. For nine years after this period the subject of the history remained free from swelling. The disease then returned, and eventually destroyed her. The most remarkable feature of the case was the spontaneous escape of the contents of the distended abdomen by the vagina. That fact is satisfactorily accounted for in the dissection, inasmuch as a communication was then discovered between the uterus and the ovarian cyst, by an intermediate aperture of the diameter of a goose-quill." Siebold's Journal, vol. ii. p. 488. A case of inflammation and abscess of the right ovary successfully treated by incision. "Upon the instrument reaching the cavity of the abscess, a large quantity of purulent matter escaped. To avoid the consequences of an entire emptying, a part of the fluid was allowed to remain. At the first dressing a pint more of the matter was allowed to escape. After the first evacuation some of the principal symptoms, such as vomiting and hiccup, ceased; the pulse acquired a better character; and all the other symptoms of a rapidly collapsing state of the health became more moderate. The wound manifested a tendency to premature closing and cicatrization. This however was prevented, and a small

aperture was kept open for three years, to ensure, as the reporter of the case expresses himself, a radical cure, which was accordingly effected." Journ. de Méd. et Chirurg. etc. tom. lxviii. p. 33.

Cases of ovarian dropsy recorded in the Transactions of the French Royal Academy of Sciences. Hist. de l'Acad. Roy. de Sciences, 1704. p. 34. Hist. etc. 1707. p. 26. A case of encysted accumulations of diverse substances of eighteen years duration, in a nun, who died when she was forty-nine years of age. The body was examined. Upon raising the integuments, and before the abdominal cavity was laid open, there presented an immense sac, which took its origin from the navel and reached down to the knees. It was charged with a variety of substances: some like balls of soap; others like large pieces of flesh; others having the character of masses of lime plaster covered with pieces of membrane. There were moreover three other large cysts of about a foot long, partly charged with a watery fluid, and partly with substances having the hardness of stone. Between the muscles and the integument, the former of which were almost entirely consumed, a number of other small petrous bodies were found, as hard as pieces of marble. Of these there was one which put forth spicula like the rowels of spurs. The cavity of the abdomen being laid open, the bowels were seen to be enveloped in another great sac, which appeared to take its origin from the first lumbar vertebra, where it was strongly attached. It was charged with a variety of substances, similar to those which were found in the other cysts, but containing moreover three or four pots full of a watery fluid of a yellow colour. The diaphragm was strongly pressed upon by the sac, and the heart was greatly flattened by it. This case was communicated to the Academy by M. Mery. Hist. 1701. p. 40. A case of ovaries containing hair, bones, and teeth. "On opening the abdominal cavity there was found a very large cyst, which occupied nearly the whole of the left hypochondrium, and was immediately attached to the uterus, to the bladder, and to the colon. This cyst contained a yellowish matter, coagulated in certain parts, but generally of the consistence of oil. In one part of it there was a ball of hair of about the size of a citron. The hairs were about an inch long, and were fastened together by a cement of a fatty kind of substance. Towards the bottom of the sac there were many small cells filled with a kind of suet; and in the middle there was a bone of a very irregular figure, at the extremity of which there were three teeth, very distinct, lodged in their respective alveoli. Both ovaries were charged with similar contents, and especially with pieces of bones and TEETH, a fact as applying to both which should be considered very unusual." Hist. etc., 1743, p. 88. A case of ovarian disease, similar to the foregoing, containing bones, teeth, hair, fat, etc., in a girl of thirteen years of age. Corvisart's Journal de Médecine, vol. v. p. 144. A case of teeth and hairs found in the right ovary. There were two sets of teeth. Edinb. Medic. and Surgic. Journal, vol. ii. p. 180. An adipose tumour of an ovary, containing hair, teeth, &c., by Mr. Coley, of Bridgenorth. Edinb. Med. and Surgic.

Journal, vol. vi. p. 50. An interesting case of ovarian dropsy, by Mr. Gaitskell, of Rotherhithe. Lond. Med. Repository, vol. v. p. 110. A case of inflammation of the ovarium, which ended in suppuration, and was followed by the discharge of a worm of about eight or nine inches in length, and also by that of a tooth like a wisdom-tooth. Communicated by Dr. Archer, of Maryland. New York Medic. Repository, vol. xii. p. 365. A case of ovarian dropsy in a woman who had never menstruated, nor had sustained any lochial discharge, although she had been three times pregnant. The case is in many respects very interesting. Dissert. Medic. Inaug. Auctore, J. Joach. Schoemberg. Götting. 1768, p. 18. A case of an ovary of extraordinary size, containing many tubercles, in which were found blood, osseous matters, a packet of curled hair, etc. Journ. Gén. de Méd. tom. xvii. p. 462. A case of a diseased ovarium, of which the following is a part of the history: "But the most extraordinary circumstance appeared on opening the rectum; for a little above the sphincter were two tumours, if we may so call them, placed one immediately above the other. The largest of the two was about two inches in length and one in breadth, and of proportional thickness. The other was much smaller. On cutting into their substance there were found a quantity of hair and several perfect teeth, incisores, bicuspides, and molares. Nothing is known of the history of the subject; but, from certain appearances, she was judged to be about thirteen years of age. The hymen was observed to be perfect." Simmons's Medical Journal, vol. i. p. 203. Lond. 1781. Ovarian disease mistaken for pregnancy. "The abdomen was tumid, and the mammæ were turgid with milk. The patient felt a motion in the abdomen like that of a fœtus. The body being opened, the ovarium was discovered to be the subject of encysted dropsy, and of a steatomatous enlargement." Seltene Chirurgische und Medicinische Vorfaelle beobachtet von Carl. Ludwig Schmalz. Leipzig, 1784. Comment. de Reb. etc., vol. xxvi. p. 700. A case of inflammation and abscess of one of the ovaries successfully treated by extirpation. "On opening the abdomen the enlarged ovary came into view. A bistouri was introduced into it, and about a pint of the most fœtid purulent fluid escaped. M. L'Aumonier divided the ovary from the fallopian tube, and eventually effected its entire removal. No great quantity of blood was lost during the operation. A part of the wound was charged with a tent of dry lint, and the whole covered with pledgets; and the abdomen was fomented with an emollient embrocation and cataplasm. The diet was exact and nourishing. The patient felt much weaker after the operation, but had less pain. On the subsequent day the pulse was excited; but an emollient clyster produced a very favourable change, and the purulent discharge from the vagina soon stopped. On the third day after the operation a little matter came from the wound, together with the lint. On the sixth day the menses appeared, and in the course of two or three weeks the patient left the hospital in good health." Hist. de la Société Royale de Médecine, 1787, p. 296. An account of a particular change of structure in the human ovarium, by Dr. Matthew Baillie,

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Fig. 1.

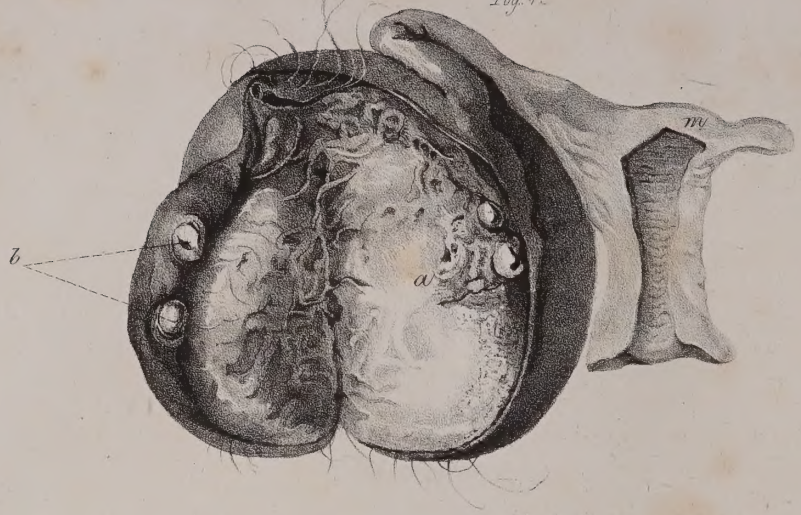


Fig 2.

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communicated by Mr. John Hunter. The case occurred in a "female child, of about twelve or thirteen years of age, and the change of structure consisted in a conversion of the natural substance of the ovary into a fatty mass, intermixed with hair and teeth." Dr. Baillie's observations are interesting. He seems to have considered the morbid action productive of the heterologous development to have been a species of generation brought on by the powers of the ovarium itself. Transact. of the Royal Society, vol. lxxix. p. 71. An account of a singular swelling of the left ovarium in a woman of twenty-five years of age, who was at the same time pregnant. "In the eighth month of her pregnancy the subject of the case was seized with violent vomitings, great pain, and tenderness of the abdomen; and notwithstanding every thing that was used in mitigation of her sufferings, she died undelivered. The uterus, upon dissection, was found mortified on the left side, with a fœtus of a natural size and form contained within it, which did not appear to be long dead. The ovarium on that side was of the size of a melon, and beginning also to mortify. On being laid open, it was found to contain a full quart of an atheromatous matter, with a fatty substance of the size of a turkey's egg, having a great quantity of hair intermixed with it; and at the bottom of the ovarium were two irregular bones with teeth implanted in them. A good engraving of the subject of this case accompanies the paper. Medic. Comment. vol. ii. p. 371. Lond. 1775. Another history of an ovarium, in which were found teeth, hair, and bones; by James Cleghorn, M.B. Transact. of the Royal Irish Academy for 1787. An account of a large tumour in the abdomen, containing hair, by John Warren, Esq., Mem. of the American Academy of Arts and Sciences, vol. i. Boston, 1785. The hair was discharged along with matter, by suppuration. The patient recovered, but she never conceived afterwards. Simmons's Medic. Journal, vol. vii. p. 298.

The subject of osseous and other heterologous formations in the ovaries, which the reader must now suppose to be of no rare occurrence in the human female, is well illustrated in pl. xxvii, and xxvii. B. Pl. xxvii. exhibits the uterus with its accompanying right ovary much affected by organic disease. The small letter A of fig. 1 is the diseased right ovary; B represents the coronæ of teeth imbedded in its substance. The letters C and D are parts of the general irregular cavity which had given lodgment to ossicula 2, 3, 4, 5, 6. The small E is the uterus; F is a portion of its cervix laid open; G is a hard, tough, fleshy tumour within the substance of its body laid open. In Pl. xxvii. B, the reader is presented with another exceedingly well-drawn representation, copied indeed from Dr. Baillie's plates, of an ovary similarly affected. See fig. 1. The small letter A exhibits the peculiar tissue of the ovarian part of the preparation; B the coronæ of two teeth, of which there are two others to be seen on the opposite boundary of the section; M is the whole of the uterus laid open. The different parts of fig 2, in the same plate, may be easily understood without the aid of a particular description.

Cases have sometimes been met with of the entire absence of one of the ova-

ries. See an example of this kind in the 108th volume of the Transactions of the Royal Society, p. 108. The case occurred at Paris, and was that of a woman who died six or seven days after delivery, at a lying-in hospital. "On dissection half of the uterus only was found developed, and had all its appurtenances complete; but the other half was hardly developed at all. The edge formed a direct line from the os tincæ, and there was no ovarium nor fallopian tube of that side, but merely their rudiments. This woman," observed the reporter, "had borne twins, which proves that more than one child may come from one ovarium at one conception; and one of these twins was a male and another a female, which upsets the hypothesis of males coming from one, and females from the other ovarium. The paper is accompanied by a beautifully executed engraving of its subject. Dr. Baillie states that a preparation, showing a deficiency of the ovary of one side, is to be seen in the collection of Dr. William Hunter, which is now at the University of Glasgow. Wardrop's Works of Dr. Matthew Baillie, p. 353.

Some instances have been recorded, in which no vestige of an ovary could be observed on either side. The following case of an adult subject may be quoted, in point of actual fact, although not precisely literally, as an example of such conformation: "Anne Joseph, a native of Radnorshire, was of a fair, florid complexion, and blue eyes, dark brown hair, a flat nose, and thick lips. She was naturally mild; but when irritated was at times malicious and revengeful. In her diet she was remarkably abstemious, eating but little animal food, and no fresh vegetables; whilst of bread she seldom consumed more than a penny loaf in the course of a week. Excessive quantities of food of any kind produced alarming faintings. The habit of her body was that of great costiveness, seldom having a passage from her bowels oftener than once in nine days, and occasionally only once in fourteen days. Having ceased to grow at ten years of age, she was only three feet six inches in stature. Her breadth across the shoulders was as much as fourteen inches; but the pelvis, contrary to what is observed in the proportions of the female skeleton, measured only nine inches from the lateral extremity of one ilium to that of the other. The breasts and nipples never acquired a larger volume than they are seen to arrive at in the male subject; nor were there any indications of puberty, either in mind or body, even at twenty-nine years of age. She always exhibited an aversion from young men who were too familiar with her. At the age of twenty-one she exhibited much uneasiness at finding herself different from other young women, which she attributed to not having menstruated, and was so desirous of relief that she frequently took medical advice with that view. She was from her infancy liable to complaints in her chest, attended by a cough, which came upon her at intervals in severe attacks, and increased upon her as she advanced in age. In her twenty-ninth year she became the subject of one of those attacks, attended by convulsions, of which she died after a few hours' illness. After death the female organs were taken out, put into a state of preservation, and afterwards accu-

rately examined. The uterus, including its vaginal portion and orifice, were of the usual form; but had never increased beyond their size in the infant state. The passage through the cervix was oblique. The cavity of the uterus was of the common shape, and the fallopian tubes were pervious as far as the fimbriæ. The coats of the uterus were membranous. The ovaria were so indistinct as rather to show the rudiments which ought to have formed them, than any part of their natural structure. The history of this case, with the account of the dissection, becomes valuable, as it shows that an imperfect state of the ovaria is not only attended with an absence of all the characters belonging to the female after puberty, but also that the uterus itself, although perfectly formed, is checked in its growth for the want of due structure of these parts." A representation of the anatomical facts of this case, very beautifully drawn by Mr. Clift, is given with the paper. Communicated by Mr. Chas. Pears, F.L.S. Transact. of the Royal Society, vol. xcv. p. 225.

The ovaries commonly shrink in old age, and are changed in their structure. They are diminished to half their natural size, and somewhat tuberculated and slightly fissured on the surface. When cut into the vesiculæ Graaffianæ, which constitute a part of their proper tissue during the female's competency for reproduction, they become charged with a whitish solid substance on the retirement of that power.

A merely indurated state of the ovaries is with difficulty determined in the living body. "When an ovarium of this kind has increased to a large size, and lies upon the side of the pelvis, and the person is at the same time of a spare habit, it may in some measure be ascertained by an accurate examination of the tumour, through the parietes of the abdomen. The tumour will feel much harder than when an ovarium is enlarged by dropsy, or filled with cysts. When the ovarium is not capable of being accurately examined, the opinion about the existence of this disease must rest much more on probable evidence than on any clear proof." Baillie's Works by Wardrop, vol. ii. p. 353. "I have found," observes Portal, "the ovaries tumified and indurated, in two women who had never had any children. One of them had been married twice, and at her second marriage to a man who had had children by his first wife." Portal Anatomie Médicale, tom. v. p. 550. Morgagni also found the ovaries obstructed in a woman who had been sterile. Epist. Anat. Médic. xxxvi. art. 17. This observation of Morgagni has been abundantly confirmed by the experience of other pathologists.

The ovaries are liable to become the subjects of hernial protrusions and prolapsions, both by themselves singly, and also as forming parts of descents of other tissues naturally situated within the pelvic cavity. Camper gives the history of a case of this kind, in which a portion of the right ovary made its escape through the ischiatic notch. Camper de Pelvi, lib. ii. cap. 2. p. 17. Portal mentions a case of umbilical hernia of the left ovary in a woman who died in her confinement. Anatom. Médic. tom. v. p. 556. The following case

of inguinal hernia of the ovaries, in the practice of Mr. Pott, is pretty generally known in England: "A healthy young woman, of twenty-three years of age, was taken into Bartholomew's Hospital, on account of two small swellings, one in each groin, which for some months had been so painful that she could not do her work as a servant. The tumours were perfectly free from inflammation, were soft, unequal in their surface, very moveable, and lay just on the outside of the tendinous opening in each of the oblique muscles, through which they seemed to have passed. The woman was in full health, large breasted, stout, and menstruated regularly; had no obstruction to the discharge per anum, nor any complaint but what arose from the uneasiness these tumours gave her when she stooped or moved so as to press them. She was the patient of Mr. Nourse. He let her blood, and took all possible pains to return the parts through the openings, through which they had clearly passed out. He found all his attempts fruitless, as did also Mr. Sainthill and myself; and the woman being incapacitated from getting her bread, and desirous to submit to any thing for relief, it was agreed to remove them. The skin and adipose membrane being divided, a fine membranous bag came into view, in which was a body so exactly resembling a human ovarium, that it was impossible to take it for any thing else. A ligature was made on it close to the tendon, and it was cut off. The same operation was done on the other side; and the appearance both at the time of operating, and in the examination of the parts removed, was exactly the same. The young woman has enjoyed good health ever since, but is become thinner and apparently more muscular: her breasts, which were large, are gone; nor has she ever menstruated since the operation, which is now some years." Pott's Works, edit. iii. vol. v. p. 184.

Fig. 1.

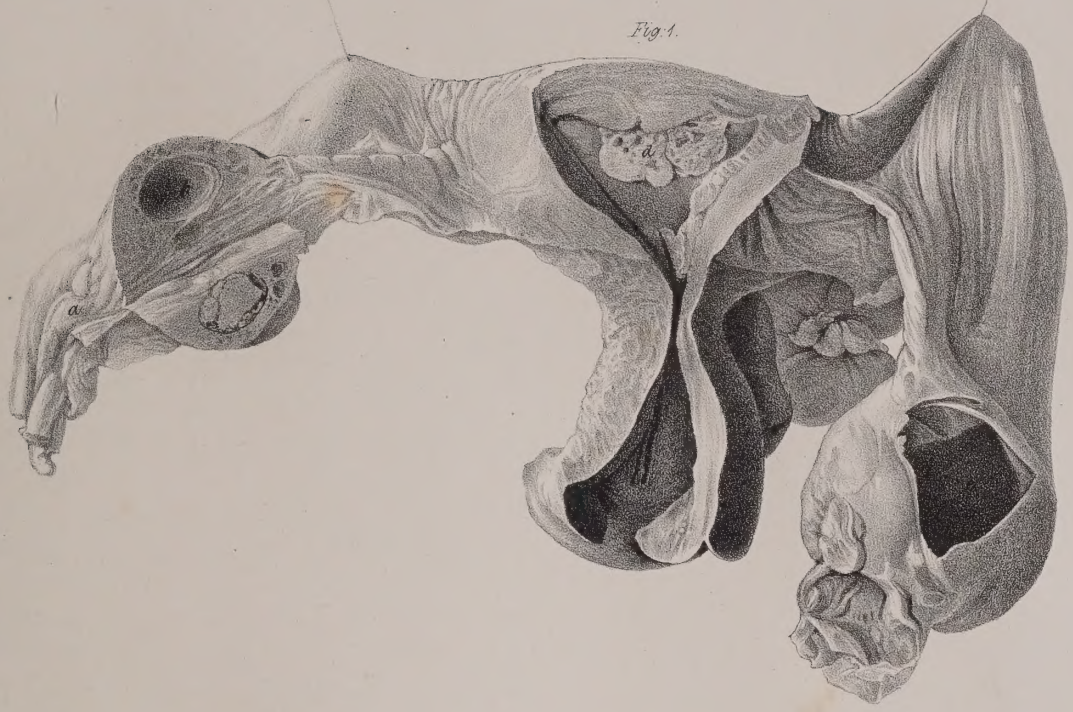


Fig. 2.

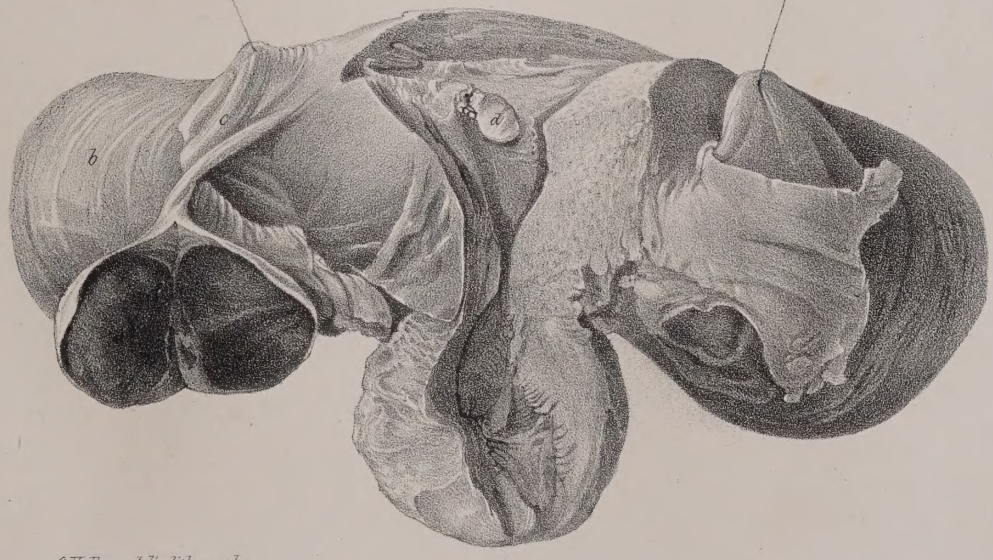


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Fig. 1.

Fig. 2.

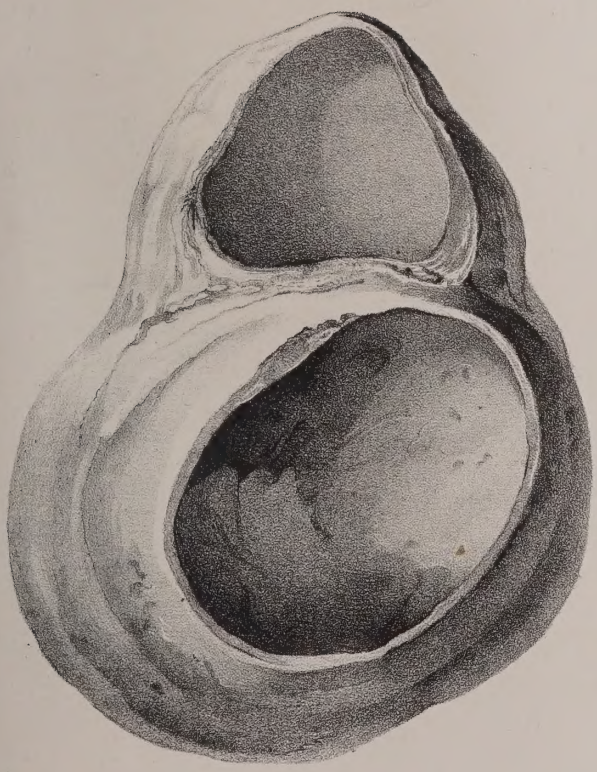
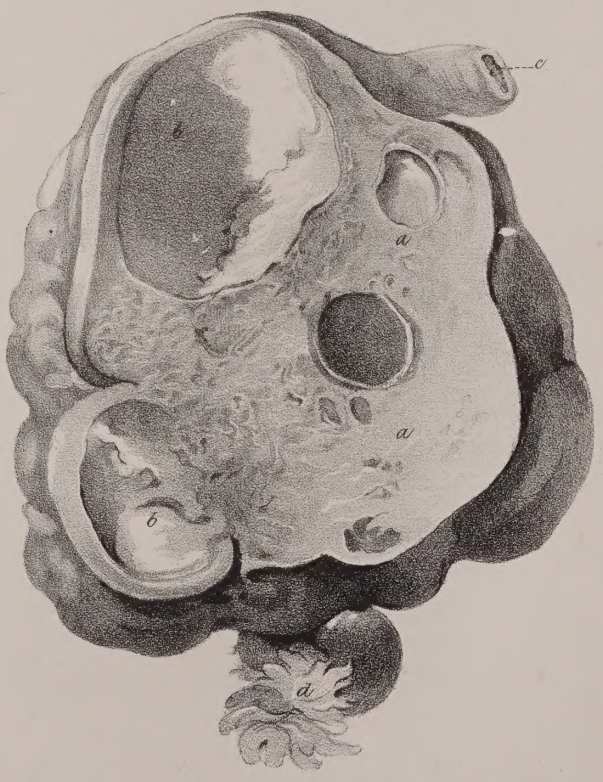


Fig. 3.

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# CHAPTER XI.

## OF PECULIAR CONFORMATIONS AND OF THE DISEASES OF THE FEMALE BREASTS.

Among the peculiar conformations of these organs in the human female, is their deficient volume. This non-development of the mammæ, at the age of puberty, has been so remarkable in some cases as to have furnished opportunities to several of the older writers of recording them as examples of their entire absence. Although, indeed, the fact of an entire absence of these organs must be admitted as very possible; experience on the other hand proves, that nature has rarely, if ever, been quite absolute in her denial of some traces of their existence to persons adequately distinguished in other respects by the possession of the characteristic attributes of the sex.

Again, many examples have been reported of the entire absence or non-development of nipples. Paullini, Ephem. Germ. Append. an. v. dec. ii. p. 67, speaks of a young woman, aged sixteen, who had no vestige of a nipple on either breast during her first pregnancy; and who, after her delivery, was obliged to press the breasts with her hand in order to force the milk into the child's mouth through a minute aperture, in the place where the nipple ought to have been. In many cases of this kind the defect will be found, upon accurate examination, more apparent than real; the constituent tissue of the nipple being often discovered to be actually imbedded in the cellular substance of the organ. It is on this principle that the application of artificial suction is almost always found effectual for the eventual development of an imperfectly evolved nipple. In Paullini's case, THERE WAS AN APERTURE at the place where a nipple ought to have been. That aperture communicated, no doubt, with the usual apparatus of lactiferous tubes: in other words, that apparatus existed, but was concealed from view by being embedded more than usually deeply in the cellular membrane of the part.

Another, and perhaps upon the whole a more remarkable, conformation of the breasts in females, is their occasional excess in number. It is stated by Prof. Percy, in a memoir on multimamme subjects, Corvisart's Journal, vol. ix. p. 378, that Anne Bullein, who passed for an accomplished beauty both in France and England, had not only six digits to each hand, but also THREE BREASTS. Is this latter fact recorded by any English historian? If not, can it be received on the authority of any foreign writer, however respectable?

The same essayist cites the case of Julia, the mother of Alexander Severus, as an example of the same conformation, and observes that for that reason she was called Julia Mammea. In ancient Idalia, and formerly in Greece and in Egypt, it is fabled that women were frequently the subjects of the singular conformation here spoken of; in consequence, as has been supposed, of the influence of the statues of Isis and Diana, who were represented as having mammæ without number, on the imaginations of the girls and women who visited the temples of those celebrated divinities; of whom the former, it is well known, was worshipped as the patroness of fecundity, and the latter in the character of Juno Lucina, as the guardian of the function of parturition.

M. Percy reports the case of a young lady with three mammæ, a rich heiress, who consulted her physician, to know whether, if she got married, she would make herself liable to have double births. She was married, but she never had a double birth.

"Women," proceeds M. Percy, "with three breasts, HAVE OFTEN BEEN SEEN, of which two have been usually well formed; but the third less perfectly moulded, more like that of a man, and situated either below or in the middle, between the two others. Both Baudelocque and Coutouly have assured me that they had met with examples of such cases. I hope I shall not offend Mad. Witus, of Treves, one of the most beautiful of women, and the mother of some of the most beautiful children in this country, by quoting her as an example of this conformation; of the fact of which, at the request of her obstetric attendant, in the presence of her husband, she was obliging enough to make me an eye witness."

Th. Bartholin, Epist. cent. iv. obs. 72, states a singularity worthy of being mentioned, viz. that he had seen a Danish woman who had three mammæ, of which two were well formed and proper to the sex and age of the party, and a third which formed a triangle with the other two, but which, from its peculiarity of conformation, presented more the appearance of the mamma of a corpulent male subject than that of a well-formed woman. Hannæus, in a letter to O. Borichius, written in 1765, stated that he had just been to see a patient who had three breasts, two on the left side, and one on the right; all of a beautiful form, and all giving milk. Borellus, in his Century of Remarkable Cases, obs. 48, cites the case of a woman of Castres, by name Rachael Raye, who had three breasts; of which two occupied their ordinary seats, and a third was situated immediately under the principal one on the left side. This third breast furnished milk, but less in quantity than the other two. "About four years ago, at Pffulendorf, a small village in Germany, I had an opportunity," observes that writer, "of examining the case of an old maiden female, who had FOUR MAMMÆ, of perfectly equal size, and placed very symmetrically in two parallel rows. Age, misery, and emaciation of body, gave to these organs an aspect which by no means presented a specimen of the beautiful.

J. F. Lynceus, in his Commentaries, observes that "his people went for curiosity to see a woman who had four breasts, all of a beautiful appearance, ranged some above the others in a regular manner, and all affording milk in great abundance."

M. Percy, in the paper already referred to, quotes the report of M. Gardeur, in which that gentleman asserted, that he knew a mulatto girl of about nine years of age, the progeny of an European father by an African female, who bore on her chest four distinct mammæ, of which two were placed in their ordinary situation, and were well formed, and the other two about an inch below and before the armpits, having seven or eight lines of elevation from the general surface of the integument, and from three inches and a half to four inches of circumference, and presenting to the sense of touch a perception, immediately under the integuments, of two smallish glandular bodies, each terminating in a small nipple proportioned to its volume. They very perfectly resembled those of a young girl, when about to enter on the age of puberty. This woman had a child at fourteen years of age, and these accessional breasts furnished a quantity of milk proportioned to their capacity. M. Gardeur had not been able to learn at what age she began to menstruate. According to appearances, however, he believed it must have been very early, probably when she was eleven or twelve years old. Since that time she always menstruated very regularly.

Under the article MONSTROSITY in the Philosophical Dictionary of Voltaire, the reader may meet with a case of similar conformation, accompanied by a prolongation of the coccyx, so as to resemble, to use the language of the original article, the tail of a cow. The subject of this case was exhibited at a show in a fair at St. Germain, whither all Paris went to see her, and paid a high price for their gratification.

Among the innumerable prisoners made by the right wing of the French army of the Rhine in the year 1800, was found an unfortunate female, a suttler, with two children, whose case attracted great commiseration, but who perished from fatigue and exhaustion, in despite of the most devoted professional attention which was paid to her. M. Gorre, an intelligent surgeon in the service, availed himself of the opportunity of examining the body. On removing her body clothing for that purpose, that gentleman observed with surprise that the subject of his intended dissection had FIVE MAMMÆ, of which four were prominent and full of milk, ranged in two lines, and each having a very large nipple, of good length, and surrounded by an extremely dark areola. The fifth was not larger than that of a girl under the age of puberty. The authenticity of this case is much confirmed by being accompanied by a well-drawn-up account of the peculiar distribution of the arteries which severally supplied the different mammæ.

"Bartholomew Salewsky, a noble Pole, and worthy of credit," observes Helbigius, De rebus variis indiciis, "saw a woman in the Island of Macassar, the ancient Celebes, who had her breasts on her back, and used to bring

them forward under the armpits to give suck to her child. She firmly declared that this conformation belonged to all her relations. Ephem. Germ. dec. i. an. 9, 10. p. 453. A peasant in the county of Winzenberck, who had two mammæ in the ordinary situation, had two more on her back of equal size and similar structure, and also, like the others, giving milk. She had borne twins three times, whom she had suckled both before and behind. Ephem. Germ. Append. ad an. iv. dec. ii. p. 203.

A third peculiarity of conformation of the female breast which we find recorded, is a plurality of nipples.

Borellus, in the case of Gabriela Gleise, a multimamme subject already quoted, gives an example of a woman who had two nipples to one breast, which were not distantly situated from each other. A similar case occurred to Holler, and may be seen published in Schenck's Work, lib. ii. de Mamillis, obs. 8. p. 304. A woman, who was introduced to Kerkringius, at Amsterdam, as an example of the same conformation, furnished milk from her right breast by two distinct nipples. One of these nipples was situated in its usual place; but the other was attached at a distance of about five fingers' breadth from the ordinary nipple, in the direction of the axilla; and from its inferior relative situation it supplied a greater abundance of milk than the other. T. Kerkring. Obs. Anat. xxi. p. 49. Ph. Jac. Sachs à Lewinheimb. Ephem. Germ. dec. i. an. 2. p. 396. A case is mentioned by Paullini, that of a Scotswoman who had three nipples on each breast, which all furnished milk at different times; one breast affording milk in the morning, and the other in the evening. Ephem. Germ. dec. ii. Append. ad an. 5. p. 67. Lanzoni saw a woman, of Romandiola, who had two nipples on the same breast not far apart. Ephem. Germ. dec. ii. an. 10. p. 228. The author may be permited to observe that he has himself often seen the constituent tissues of what appeared to him to have been two nipples in such close lateral apposition to each other, as to have the effect of forming one large double nipple furnishing milk at different points, of an oblong diameter of nearly an inch of surface.

One other variety of the female breast in adult subjects which perhaps ought not to be omitted in an enumeration of its known malformations is an inordinate development of its tissue in respect to volume. These organs, naturally of very unequal size in different women, are observed in some to become enormously developed INDEPENDENT of actual disease. A remarkable case of this description is communicated by Dr. W. Durston in the third volume of Lowthorp's Abridgment of the Philosophical Transactions, p. 80, entitled "A case of very great swelling of the breasts of a maid of twenty-three years of age. In this case, one breast weighed sixty-four pounds. After the death of its subject, it was found to contain nothing but the usual component parts.

Sir Astley Cooper, in his work entitled Illustrations of the Diseases of the Breast, bestows a chapter on an affection of this organ to which he gives the designation of the large and pendulous breast. "The glandular structure of the

breast," observes that eminent surgeon, "sometimes grows to an enormous size, and becomes extremely pendulous, so as to reach to the fore part of the abdomen: but this is to be understood as not to be the effect of relaxation, but to be an absolute growth of the secreting lobes, which can be distinctly felt to be enlarged and hardened, and are sometimes accompanied by a considerable degree of tenderness. A girl, whose age the last time she was under my care was twenty-three, had frequently asked my advice for this kind of increase of each bosom. Her general appearance was healthy; and she seemed rather disposed to corpulency; but her constitution was defective in her menstruation being irregular, in the colour of that secretion being pale, and in its quantity being much less than natural. But the most remarkable case of this kind which I have witnessed was sent to Dr. Babington and myself, from Pembrokeshire. The young lady brought me the following letter:—"Sir, I am induced to request your advice in the case of Miss T., who about three years ago was first affected with an enlargement of the left mamma which had for some time been increasing in size; and the right breast then began also to enlarge, until both attained their present dimensions. She is now fifteen years of age and of good general health: the catamenia appeared about twelve months ago. I was requested to see her last winter, in company with Mr. Gregory, of Milford, and she has taken various emenagogue medicines and gentle laxatives, and she was enjoined regular exercise and sea bathing. The catamenia returned at three or four regular intervals; at which time the mammæ considerably decreased in size; but since May last the periods have been very distant, and the discharge is very small in quantity. The mammæ are now of extraordinary dimensions. The circumference of the left is twenty three inches and a half, that of the right is twenty-two inches, and they are pendent like a pear, as the neck is comparatively narrow. I cannot perceive any tumour either in the breast or in the axilla. The skin feels and appears to be natural. Her appetite is good, and the bowels are kept regular by occasional doses of neutral salts. She suffers no pain whatever in either mamma; but she does not appear so lively as girls of her age; but, on the contrary, she is indeed heavy and dull. I am, sir, your obedient servant, W. D. Jones. Haverfordwest, November 5, 1821."

The local treatment recommended by Sir Astley in the above variety of enlargement of the mammæ is to apply a suspensory bandage to each breast, in order to give artificial support; whilst the essential principle to be attended to in the conduct of the constitutional treatment is to promote and sustain the menstrual secretion, for which purpose the exhibition of different forms of steel, in combination with aloes, will be found the most efficacious medicine. "The ferrum ammoniatum, the mistura ferri composita, the carbonate of iron, will furnish the forms of steel medicines which, united with aloes, will be found the most beneficial; and if the biliary secretions be defective, the Pil. Hydrarg. Subm. Comp. or of the Hydrarg. cum Creta will form the best medicines. Appended to the above case, and contained in the same chapter, are the fol-

lowing admirable remarks on the subject of a kindred affection. "Women who have led a life of celibacy to the age of thirty or thirty-five years, and whose menstrual secretion has become extremely defective, and who are the subjects of a severe fluor albus, are liable to have a change produced in their breasts: these organs become enlarged but not pendulous; and upon careful manipular examination, each lobe of the gland can be distinctly felt enlarged and hardened, moving freely on each other: both breasts are affected, but generally one more than another, accompanied by occasional pain, more especially just before the period of menstruation; which discharge is very slight, pale in colour, and of short continuance. In cold weather, if the breast be at all exposed, the pain is augmented; and in these cases cold has a great influence in lessening the menstrual secretion, already exceedingly diminished. An absorbent gland is sometimes enlarged in each axilla; but this arises from simple irritation, and should not excite any apprehension of malignancy. The breast, after having been for some time enlarged, begins to waste, and in a few years is in a great degree absorbed."

This complaint consists in a change in the secreting portion of the breast, by which it is converted into a much more solid structure than natural, and during the presence of which, its secreting power appears to be in a great degree destroyed. The breast presents itself to the feel as if composed of a great number of moveable, very solid, but connected, portions. The treatment consists in restoring, if possible, the menstrual secretion by the means already alluded to, and by the use of the warm hip-bath; and locally in applying leeches when there is pain, and desiring the patient to wear the emplastrum ammoniaci cum hydrargyro." Cooper's Illustrations of the Diseases of the Breast, chap. vii. p. 69.

Another remarkable variety of enlargement of the female breast is that which sometimes arises from a precocious development of the sexual organs in early infancy. Cruger quotes a case of this kind in the person of a female infant of eighteen weeks old, who had mammæ as large as apples of ordinary size, from which were secreted from three to four ounces of milk daily. Ephem. Germanic. dec. ii. an. 9. p. 241. See a reference to several similar cases in the same work, dec. i. an. 8. p. 143. Similar testimonies are given in a paper communicated by Lanzoni. Ephem. Germanic. dec. ii. an. 10. p. 231. At the beginning of M. Sue's Tracts on Surgery, Anatomy, and Practice of Medicine, published at Paris in 1761, we have an account of a girl who, at the age of eight years and ten months, was delivered of a dead child, at the full period of gestation. This young mother had menstruated ever since the age of two years; and the parts of generation and the mammæ were as much developed as those of young women of seventeen or eighteen years of age. Essais, etc., par M. Sue le jeune, tom. ii. p. 344. In M. Barthez's Consultations de Médecine, we have a case of female precociousness, entitled Premature Puberty, followed by suppression, melancholic affections, and palpitations of the heart. "The young

lady who has done me the honour to solicit my advice is in her thirteenth year, and is of a melancholic temperament. The catamenia appeared at the age of eight years; and she continued to menstruate periodically for five successive months. She was then plump, and her breasts were well developed. Being sent to a convent, she became hypochondriac in an alarming degree, and she began from that time to be sensible of slight palpitations," etc. In the beginning of June 1810, M. Jangirau had occasion to see the child of a peasant, called Isabeau Viole, a native of Fonsegrives, three miles from Thoulouse. She was aged four years and three months, had menstruated from the age of three years, and the catamenia appeared regularly every month. The canine and incisores teeth had been already renewed; and, according to the mother's report, the first dentition had been extremely premature. The sexual organs were furnished with thick down. The breasts were prominent as in a girl of sixteen or seventeen, but not so firm and elastic as is usual at that age. Her height was three feet ten inches and six lines. She measured round the waist twenty-three inches five lines. The complexion was clear brown. She had black eyes, and her constitution appeared to be strong and vigorous. London Medic. and Physic. Journal, vol. xxvii. p. 522. See a case of precocious development of the sexual organs and functions of a female child, in the second year of her age, communicated by Dr. Wall, and published in the second volume of the Transactions of the Medical and Chirurgical Society. In the fourth volume of the same work we have recorded the very interesting case of Charlotte Mawer, communicated by Sir Astley Cooper. The subject of this case was the child of a waterman at Lincoln, aged about four years and a half at the time when the history was drawn up. She had had an appearance of the catamenia about a year and a half before that period, and again in the course of a year and a half afterwards. During the last two or three preceding periods, the function had been performed at intervals of five weeks. The discharge resembled that of the generality of women, excepting that it was of a rather darker colour. "The last period was about the fifth of March 1813, when the girl looked pale, and seemed to have a degree of lassitude about her. The breasts are very full, and as large as those of most young women at twenty years of age. She is very broad over her chest and loins. Her pelvis is much larger than is ever observed at her age. The pubes are covered with a white-coloured hair, which began to show itself when she had the first appearance of the catamenia. She is in her aspect quite a little woman, excepting as to her countenance, which is really childish. Her catamenial discharge is as copious as in most women, and it generally continues about four days. It is the colour of venous blood, and does not coagulate." Extracted from the Medico-Chirurgical Transactions. Lond. Medic. Journal, vol. xxx. p. 145. A little girl, eight years old, of the village of Alenton, often applied to her own breasts a foster child of her mother's, in consequence of which she became herself competent to secrete milk, and was able to suckle the same child for an entire month; her mother in the mean time not being able to

do it on account of soreness of her nipples. This little girl retained the power of thus secreting milk of excellent quality, for some time, and expressed it easily in jets when she was presented to the Royal Academy of Surgeons, on the 16th of October, 1783. On that same day she furnished more than half an ounce of milk by pressure, applied in the usual way, to the anterior part of each breast, at M. Baudelocque's house, in the presence of upwards of fifty of that gentleman's pupils. This young lady, who had none of the external marks of puberty, was deaf and dumb from her birth. She had periodically sustained a discharge of blood from her eyes during three days in every month, from the age of four years to that of five and a half. Being suppressed at that time, her health seemed to be injured for several months, when a new sanguine evacuation was instituted by the natural passages, which eventually became as regular as the former. Baudelocque's Midwifery, Heath's Translation, vol. i. p. 219.

Analogous functionally to the state of mammæ in some of the cases just enumerated are cases of competency to secrete milk at periods not puerperal, and by women not pregnant, nor nursing, and even by persons far advanced in age; of which the following are examples :—In the fourteenth volume of the Leipsic Commentaries, we find several interesting cases of this description. "A woman, aged forty-eight, of middle stature, enjoying good health, and the mother of six children, the youngest of whom she had suckled for a year and six weeks, took charge of a neighbour's child, an infant two days old, whose mother had died suddenly. That it might not lose its instinctive faculty of sucking, she applied it to her breasts, which, although it was nine years since she had suckled her youngest child, she found competent in about six days to secrete a milky fluid. The commencement of this elaboration of milk was accompanied by pain in the armpits, titilation in the mammæ, heat of skin, and fever. She suckled her neighbour's child for two years and a half. Her menses ceased, and did not return when the child was taken from the breast. There are other very interesting cases in the same paper of similar import. The last of the series, was one whose subject was sixty years of age, and who suckled her grandchild in consequence of the death of its nurse. See Köngl. Vetenskaps Académens Handlinger, fur 1764, vol. xxv. Comment. Lipsiæ, vol. xiv. p. 198. Two similar cases are mentioned by Diemerbroeck. Anatom. Corp. Human. lib. ii. cap. 2. Dr. Thomas Stack affirms, on the evidence of what he saw with his own eyes, that a fact precisely of the same kind occurred to himself in the course of his professional experience. Its subject was a woman of sixty-eight. She suckled her grand-daughter, although she had not had a child for twenty years. This case is given at great length in Martin's Abridgment of the Transactions of the Royal Society, vol. ix., communicated by R. R. Robert, Bishop of Cork.

Appended to the above cases, although not forming essentially a part of their subject, may be recorded, as presenting an example of a singular malady, the

following interesting narrative. A young lady of Troyes, eleven years of age, delicate as to constitution, but little subject to diseases, of good stature for her age, with teeth and gums quite sound, and her movements free and easy, experienced, in 1769, attacks of nausea and pains of the bowels, accompanied by faintings. The most skilful physicians were consulted, who treated her with special reference to the state of her bowels. The symptoms soon ceased. Some time afterwards, however, she had an itching of the left nostril, which led to the opinion that she had worms: and the usual remedies in such cases were administered to her, but without benefit. She then began to be affected with dull pain at the extremity of the chest, and an acute pain of the arms and shoulders, which moreover extended to each mamma, and between one breast and the other. It is here, properly speaking, that the history of the case commences. A trifling discharge was now observed to take place from the breast of a limpid transparent fluid. The following day it was so considerable that it penetrated through eight doubles of dressings, as well as through the ordinary clothes of the patient, in less than three hours. It lasted something more than a fortnight. The respiration, which had been a little constrained, then became more free, and the appetite, which had been greatly impaired, returned. The discharge from the breast subsequently to this period became variously modified in its amount, diminution, occasional cessation, and alternations with diverse other affections of different parts of the body. After the lapse of about three months from the commencement of her indisposition, the patient felt a movement in one of her breasts, such as usually announces a flow of fluid into them. It was so sudden that no time was allowed for undressing. The compresses and the body clothing were speedily soaked through, and the vis a tergo was such as to propel the rapidly secreted humour in minute streams to some distance. It was observed that the discharge never took place during the night, nor when the patient was in bed, excepting on one occasion, and then it was very moderate. On a journey which she performed from Troyes to Paris, and which took her two days, it occurred only once, and in small quantity. On several occasions of its taking place between mid-day and five o'clock in the afternoon, the effluxion proved very profuse. The fluid was submitted to a sort of chemical analysis, which ascertained nothing; inasmuch as it only reported that it discovered no evidence of an admixture, and that therefore it should be considered as being little more than pure water. M. Lorry, one of the most eminent of the physicians at Paris, who attended this young lady, observed that the patient perspired very little, that the mammæ did not appear to be affected either with heat or swelling during their being engaged in the morbid secretion now described, and that the nipple of the left breast was slightly fissured, and also somewhat enlarged, as if from the accession of a small wen-like growth to its original natural tissue. These facts furnished M. Lorry with data for conjectures as to the cause, but led him to no suggestion of an effectual remedy for the malady. The singularity of the

case however furnished an inducement to professional men to inquire if there had ever existed any parallel or similar cases. At length, in an old work, in black letter character, found in the library of the Marquis de Pauliny, entitled, The Three Wonders, a case in many respects perfectly similar to it was met with. The subject of it was a young lady of Romagne, who was between seven and eight years of age, who furnished, it was ascertained, a supply of limpid fluid from her nipples, as if by transudation from their surfaces, and not by any visible duct or aperture. The fluid thus effused was transparent, and devoid of smell. Sometimes a measure equal to three pints of it was produced in the course of one day, without appearing to be attended with the slightest inconvenience to the young lady's general health.

"M. Coquereau, physician of the Faculty of Paris, obtained information of similar facts from M. Thiesset, Dean of the College of Physicians of Troyes; and especially of examples in two young females, under the age of puberty, who had sustained the same sort of discharge from their breasts, but who entirely ceased to be the subjects of it upon the appearance and establishment of the catamenia. M. Missa, another physician of the Faculty of Paris, transmitted to M. Cadet, a member of the Academy, a still more remarkable example of the same morbid affection in a male subject." Hist. de l'Academie Royale des Sciences, 1772, pt. i. p. 25. Communicated by M. Cadet.

On entering on the consideration of the more important DISEASES of the female breast, the author feels fully sensible of the great magnitude of the subject, and of his own perfect incompetence to do it justice. Moreover, the state of professional knowledge of divers diseases incident to that organ is so very limited and incomplete, that, with one illustrious exception, there are no guides to be met with in this department of pathology, who should seem competent to conduct us even over its threshold. The well-informed reader will immediately identify this exception with the inestimable Illustrations of the Diseases of the Breast, by Sir Astley Cooper, already referred to. That eminently PRACTICAL surgeon has divided his Illustrations of the Diseases of the Breast into two parts; viz. those which are, and those which are not, malignant. In the part already published he has confined himself, as he himself has stated in his preface, to the description of such of the diseases of this organ as are not malignant; distinguishing as not malignant those which do not arise from a vitiated state of the system, nor produce any dangerous constitutional effects; and do not contaminate the parts in the neighbourhood, nor affect those at a distance from their original seat.

Sir Astley Cooper has distributed the diseases of the breast into three classes; viz. 1st, into those which are the result of common inflammation, whether it be acute or chronic. 2ndly, into complaints which arise from peculiar or specific action, but which are not malignant, and do not contaminate other structures; and 3rdly, into those which are not only founded on

local, malignant, and specific actions, but which are connected with a peculiar and unhealthy state of the constitution. The first class of the above distribution of tumours of the female breasts we shall have a better opportunity of d scussing than at present, when we come to treat of the diseases of the puerperal state.

With respect to the second class of diseases of the same organ as above distributed, it is an equally extraordinary and valuable fact, that it comprehends eight distinct and well-defined diseases, which the writer has felt himself entitled to EXCLUDE from his class of essentially malignant tumours.

If then there are eight painful forms of swelled breasts which are liable to be mistaken, and which have been mistaken times without number, for cases of cancer, and of fungus hæmatodes, the author thinks he cannot devote the greater part of the present article to a better purpose than to indicate the several elements of a correct diagnosis, among so many and such multifarious subjects. But this task it is obvious cannot be moderately well performed without borrowing much assistance from accurate and experienced pathological anatomists, and without a deep sense of an almost entire dependence upon the published reports of such writers as Sir Astley Cooper. What does that gentleman himself say of the difficulty of the subject? The question admits of being answered in his own words, as follows. "I am fully aware of the difficulty of the task, and am ready to acknowledge that I have been often mistaken in my diagnosis; but if such error of judgment occur to one who has had a considerable share of practice and experience, and who trusts he has not been an idle nor an inattentive spectator of what has been presented to his observation, how often must those be liable to error, who do not industriously investigate the nature of disease by dissection, and compare it with its external characters in the living body!"

The several tumours comprehended under the second class of mammary diseases to which our observations on this subject are intended more immediately to apply, are enumerated under the following designations; viz. 1st, the hydatid; 2nd, the chronic mammary tumour; 3rd, the ossific; 4th, the adipose; 5th, the large and pendulous breast; 6th, the scrofulous; 7th, the irritable breast; 8th, ecchymosis of the breast.

We have already seen much ingenious speculation as well as useful labour bestowed upon the subject of the hydatid origin of certain forms of heterologue formations. In some cases, as by the late Dr. Adams, hydatid formations have been identified with scirrhus and cancer. We are on the other hand more correctly informed by Sir Astley Cooper, that out of four varieties of hydatid tumours of the breast, ONE ONLY IS MALIGNANT.

Of the several hydatid tumours of the breast, the first species of them exists in the form of simple bags containing a serous fluid; and to these Sir Astley Cooper has attached the epithet of cellulous hydatids. The symptoms they produce are the following. The breast gradually swells, and in the beginning

is entirely free from pain or tenderness. It becomes hard, and no fluctuation can then be discovered in it. It continues slowly growing for months, and even for years, sometimes acquiring a considerable magnitude; as for example, of eight or nine pounds. In other cases, although the bosom becomes quite filled with these bags, it nevertheless never acquires twice the size of the other breast. At first the swelling feels entirely solid, so that it bears a great resemblance to a simple chronic enlargement of the breast; but after a great length of time, a fluctuation can be discovered in it at one part, and then the breast begins to increase more quickly; and in several parts similar fluctuations can be detected.

Eventually the cutaneous veins become varicose; but although the breast enlarges prodigiously, it still continues almost entirely free from pain. But to this fact there are exceptions; for some persons feel an unusual heat, and some, as the breast increases, suffer pain both in the part itself and in the shoulder. The tumour is extremely moveable upon the pectoral muscle, is very pendulous, and in some cases the whole of the mammary gland, in others only a small portion of it, becomes involved in the disease. At length one of the fluctuating portions of the breast slowly inflames, ulcerates, and discharges a large quantity of serum, or at all events of fluid having the general character of serum, but of a consistence somewhat more glairy. After the sac shall have been emptied, and the external opening closed, if the fluid be entirely discharged, it is a long time before it reaccumulates; and sometimes the sides of the sac adhere, and the cyst ceases to secrete. In other cases the swelling gives way and breaks; which is followed by the escape of a mucilaginous fluid, mixed with serum: and thus several of the cells in succession, and at distant periods, pass through the ulcerative process, and form sinuses, which are very difficult to heal. Excepting during the process of ulceration the general health remains entirely undisturbed, and the person suffers so little, either locally or constitutionally, that her friends do not discover her malady; and nothing would lead her to an operation for its removal, but the anxiety of mind and the apprehension which the idea of cancer produces, and the great inconvenience and distress which the weight of a large swelling naturally occasions. Although the whole breast should be involved in the malady, and even although the swelling should ulcerate, discharge largely, and put on a formidable appearance; yet the glands in the axilla remain entirely free from the disease; or if one should become slightly enlarged, it is in consequence of simple irritation, and it disappears when the complaint in the breast is removed.

The following dissection, taken in connexion and diligently compared with the preceding history of the disease, will be found to supply several very important elements of a correct diagnosis: "When the swelling, and the breast in which it is situated, are examined, it is found, upon a careful dissection, that the interstices of the glandular structure itself, and the tendinous and cellular tissue connecting it, are in a great measure filled with fibrous matter, poured out by a peculiar species of chronic inflammation: but in some of the interstices

a bag is formed, into which a serous, or glairy, or sometimes a mucous fluid is secreted, according to the degree of inflammation present; and this fluid, from its viscidity, and from the solid matter effused around it, as well as from the cyst being a perfect bag, cannot escape into the surrounding tissues: but by its quantity, its pressure, and the gradual yielding of the bag, it becomes of very considerable size; and vast numbers of these cysts are found to occupy every part of the breast, producing and supporting a continued slow irritation, and occasioning an effusion of fibrous matter, by which the breast forms an immense tumour, consisting of solid and fluid matter. Within these bags of fluid, hydatids are seen hanging by small stalks; but some, which from their appearance before I opened them I supposed to be simple cells, instead of being entirely hollow, had a cellular tissue within them in which a fluid was collected, which, although it produced the appearance of cells, or hydatids, on the outside, assumed within the character of anasarcous swellings.

The breast, when not greatly enlarged, is almost entirely filled with cellulous hydatids: some are produced in clusters, but the greater number are completely distinct from each other; and in those cases in which the breast is but slightly enlarged, the constitution is but little irritable, and only a slight adhesive inflammation accompanies it.

The size of these cells varies from that of a head of a pin to that of a musket-ball. Of these cells some contain fluid, and others are empty. Those in which fluid is contained are highly vascular; and so much blood circulates in tumours of this description, that the veins become greatly dilated, and much blood is often lost during their removal; and there is a disposition in the vessels to bleed after the extirpation of the tumour.

Although, in the greater number of cases, the whole breast becomes involved in the disease, yet it is frequently seen to affect only a part of it; and the removal only of portions of the organ has been sufficient to prevent a return of the complaint.

A material ingredient in the diagnosis of this disease is the fact that, in its first stage, it resembles simple chronic inflammation. But it may be distinguished from it by the absence of tenderness upon pressure; and the perfect health in which the patient remains, stamps it to be an entirely local disease.

In the second stage, when it fluctuates, it is discriminated by the medical attendant being able to recognise several distinct seats of fluctuation, and by the absence of tenderness. But the best criterion is found in the puncture of the bag; when the evacuation of the clear serum, instead of a purulent fluid, gives at once a positive indication of the true nature of the disease.

From a scirrhous tumour it may be distinguished by the absence of those occasional acute and darting pains which accompany that malignant affection, by the satisfactory state of the general health, and by the excessive hardness of the part affected, which are concomitants of scirrhus." On this latter point, however, Sir Astley makes the following practical observation:—"I have seen a

case in which a true scirrhous tubercle had hydatids connected with it; and although the swelling was carefully removed, it returned: but in that case the usual pain of scirrhus accompanied the disease."

The treatment proper for this form of hydatid disease is more negative than positive; for no local applications are beneficial, and the constitution requires no attention, because the general health sustains no injury from the complaint.

If only one bag is discovered, and that is found of considerable size, it may be PUNCTURED with a prospect of advantage; "for it sometimes happens," observes the author of the Illustrations, "that it will not again fill, as will be seen in several of the cases. But when the enlargement is excessive; when the swelling acquires a weight of several pounds; when the breast becomes very pendulous, and drags upon the surrounding parts; when there is great apprehension on the part of the patient of some malignant disease, then it will be good practice to effect its removal. "The operation itself is a simple piece of dissection, in which it will be found the best plan to secure each divided vessel in immediate succession, to prevent any great loss of blood: but it must be confessed that this is not quite necessary; as the operation does not require much time in its performance, and the vessels can be compressed by an assistant whilst the surgeon is removing the tumour: or if any cyst be suffered to remain, it will still continue to grow, and the remaining part of the breast continue subject to a renewed extension of the hydatid tumour.

The second species of hydatid disease in the breast is stated by Sir Astley Cooper to be very curious, but utterly impossible to be understood without the assistance of a graphic illustration. See Sir Astley's Work already referred to, Pl. III. In the case represented, the breast was greatly enlarged, and generally much hardened, by the effusion of fibrine, in lobes, into the cellular tissue. But in several parts it contained bags of serum, and formed fluctuating cysts of various sizes. In each of these cysts there hung a cluster of swellings like polypi, supported by a small stalk; and the little pendulous projections appeared to float in the fluid which had been produced around them in the different cysts.

"Many hydatids were found in a detached state, both in the fluid within the bags, and in the solid matter effused into the substance of the breast; and taking the whole tumour, vast numbers of them had been formed in it. Their size varied; but the largest did not exceed that of a barleycorn, the figure of which they assumed. When opened, they were found to be composed of numerous lamellæ, like the crystalline humour of the eye, or like the layers in an onion, which could be readily peeled from each other. When removed from the breast they had a pearly appearance, and the laminated character of pearl internally. The cyst in which they were contained was a perfect bag, and it was composed internally of a membrane, which was highly vascular, like other secreting surfaces: and the solid part surrounding the cyst had a greater number of vessels near the bag than at a remote distance from it; but the whole of the diseased structure was endowed with great vascularity.

In its external character this disease resembles the first species of hydatid tumour already described; and the absence of tenderness being the same in both, it will thus be readily distinguished from simple chronic inflammation of the breast. But in the present state of our knowledge, it can only be discriminated by dissection, from the former hydatid disease. From the scirrhous tubercle it may be known by the hardness, by the occasional severe pain, and by the broken health, which usually attend that disease; for although in the case from which the present description of the complaint has been given, the tumour on its removal weighed three pounds; yet the general health was good, the absorbent glands in the axilla were unaffected, and there was no other local disease in any part of the body."

It may be further observed that scirrhous tumours very rarely acquire so great a magnitude as the hydatid swelling here described. Many years, indeed, might elapse before the removal of the diseased part might become indispensable on account of its magnitude. In the case of one of Sir Astley Cooper's patients, it had existed fourteen years at the time of the operation.

"Extirpation is the only mode of relief for this complaint: for no constitutional remedy has ever been found to check its progress, and no local application can be used with any prospect of advantage. A puncture into the cyst could only afford temporary relief; but its entire removal by operation is free from danger at the moment, and the patient's mind may be divested of all apprehension for the future."

The above admirable description of the second species of hydatid tumour is further illustrated by the following well-selected case in Sir Astley Cooper's practice. "Mrs. King, aged fifty-eight, had an enormous enlargement of her left breast, which she first discovered fourteen years ago, and then supposed it arose from a blow. When she first observed it, its size was that of a marble. It felt hard, and was unattended with pain. It appeared to be buried in the substance of the breast; but it was not very moveable in the glandular structure. It increased gradually until two years ago, by which time it had acquired the size of a melon. At that period it seemed to increase suddenly, and to grow faster than before; but it was still unattended with pain; and her general health did not appear to suffer.

Last Christmas it again suddenly increased; but was still devoid of any painful sensations; excepting that sometimes when she had a cold, she felt a slight uneasiness in the part. On the 30th of September 1822, I first saw her, and the tumour then measured thirty-five inches in circumference. In the greater part it was solid; but in other parts it was soft and fluctuating, and one bag evidently contained a large quantity of fluid. The solid portion of the tumour was placed at its upper part; while the fluid occupied the lower part. The patient's general health was good, but she suffered from the weight of the enlarged breast drawing down the skin and pectoral muscles, and putting the nerves exceedingly upon the stretch.

On the 1st of October I removed the tumour, in the presence of Mr. Key, of Guy's Hospital, and Mr. Lavis, a surgeon in Westminster. The large vessels divided in the operation were immediately secured, or compressed by an assistant as soon as divided, so as to prevent any loss of blood in the operation. The wound when dressed on the seventh day appeared healthy. The irritative fever consequent upon the operation was very slight, and the patient recovered without any untoward circumstances."

The third species of hydatid tumours of the breast, agreeably to Sir Astley's distribution of these complaints, is that which is formed by the presence of the animal or globular hydatid. "The animal hydatid is a simple bag containing fluid, and which has no vascular connexion with the surrounding parts, and which produces within its interior a multitude of bags similar to itself. They are often met with in great numbers in the liver; and they have frequently been seen in the lower part of the abdomen, between the bladder and rectum, where they are sometimes the cause of retention of urine. This hydatid is contained in a cyst formed in the breast by the adhesive process; for wherever it is deposited, it excites irritation and becomes surrounded and encased by an effusion of fibrine of a highly vascular texture; and its internal and secreting surface is directly applied to that of the hydatid. A slight moisture exists between them, from their having no vascular connexion.

In the breast, I have only seen them exist singly; but in other parts of the body great numbers are found together. The single hydatid here referred to, is a semi-diaphanous bag filled with a limpid aqueous fluid; and it is uniformly smooth on its external surface. It has no opening nor inlet; so that it must derive its nourishment by absorption from its external surface. It is composed of two coats, of which the external is of considerable density; and if any opaque body be placed behind it, it has the shining appearance of mother of pearl, and reflects the rays of light from its surface. It possesses a considerable share of elasticity, and rolls itself up when it is broken. This external layer is lined by a very delicate internal membrane, which appears to be its uterus; for, from its interior, a multitude of small hydatids grow, which at first adhere to the membrane, but afterwards become detached, from its falling into the fluid which the hydatid contains. If therefore the fluid contents of the hydatid be collected in a glass, an immense number of small hydatids will be discovered floating in them. Each of these small bags becomes in its turn a parent hydatid, competent to produce young on its internal surface, in a similar manner to the parent cyst.

I am induced to believe these hydatids to be distinct animals; first, because they have an existence and growth of their own, having no vascular connexion with the part in which they are found; being only encased and surrounded by a vascular and secreting cyst; secondly, because they have the power of re-producing their own species; thirdly, because that in the brain of sheep a similar bag is found, which, for several hours after the sheep has been killed, if it be put into warm water, has a distinct and very considerable vermicular motion;

and fourthly, because that on the surface of the abdominal viscera, and sometimes in their interior, a hydatid is found with a mouth and neck added to it, and consequently must be presumed to receive its food through the mouth like other animals.

The hydatid is supposed to be deposited in the structure in which it grows, carried thither by the blood. Into whatever part it is thrown it excites irritation, and becomes surrounded by an adhesive process, by which is formed the cyst in which it is enveloped. The parent hydatid is necessarily supported by a secretion from the internal surface of the cyst in which it is found: but the small hydatids within are probably nourished by the fluid which the parent hydatid contains, so soon as they drop from and cease to be connected with the parent cyst.

When one of these hydatids is produced in the breast, an inflammation is excited in it; and a wall of fibrine is formed, by which it becomes surrounded. It then feels hard; and, from the small size of the hydatid, a fluctuation cannot be discovered. But as the hydatid grows, although the quantity of solid matter increases, the fluid in the hydatid becomes nevertheless more abundant; a fluctuation in the centre of the tumour may be ultimately perceived. When the hydatid has considerably enlarged, it sometimes produces a suppurative inflammation; and when the matter is discharged, whether by the lancet or by ulceration, the hydatid escapes at the opening. There is in the collection of preparations at St. Thomas's Hospital, a hydatid which was thus discharged by ulceration from an abscess in the breast.

The proper treatment of these hydatid tumours is to make an incision in them, and to discharge the cyst; after which, a simple poultice will be sufficient to heal the wound; or if they be punctured and the fluid be discharged, and it should afterwards re-accumulate, a seton may be passed into it, and the sac will slough away. But when the fluctuation escapes observation, and the tumour is believed to be of a scirrhous nature, and the surgeon on removing it discovers the hydatid bag contained within it, he will then be able confidently to assure the patient that she is perfectly free from any future danger."

The distinguishing marks of this disease are its central fluctuation, its solid circumference, and the absence of tenderness on pressure. The disease is neither dangerous before the operation, nor is the operation itself followed by any ill consequences.

This third variety of hydatid tumour of the female breast is beautifully illustrated by a plate, for which the drawing was obtained from a patient of Mr. Bayfield. See Pl. v. fig. 5, in Sir Astley Cooper's Illustrations. The case itself is briefly sketched as follows: "Mrs. C., aged forty-four, was afflicted with a swelling in her left breast, which when she first observed it was of the size of a filbert. It gradually increased in size for eleven months; but was entirely free from pain. The general health in the mean time remained good,

and the catamenia perfectly regular. From the time of the operation for its removal, which was performed several years ago, to the present period, the breast has remained quite free from pain or disease of any kind."

See two interesting cases of hydatid tumours of the mamma in Sir Everard Home's Observations on Cancer. Cases xxvi. and xxvii. pp. 102 and 106. The opinion of the reporter of the case coinciding with that of Sir Astley Cooper, as to the non-malignancy of tumours of this class, is clearly expressed in the following passage: "These two cases of simple hydatid in the breast, unconnected with any diseased alteration of structure, have led me to consider those hydatids which are sometimes met with in the breast, after that gland has taken on a cancerous disease; and I am led, from every consideration I can give the subject, to believe that such hydatids are no part of the poisonous disease, but accidental complaints superadded to it; and since such hydatids do not occur in a natural and healthy state of the glands, they are much more likely to do so when it is under the influence of another disease. There are preparations, in the Hunterian Museum, exhibiting a great number of small cysts of this kind in a scirrhous breast; and there is one of the size of a pullet's egg, into which a portion of a fungous excrescence is seen to project: but the surface of the projecting tumour is quite smooth. It is therefore probable, that the tumour made progress in the direction in which there was the least resistance, but that it had nothing to do with the formation of the hydatid. Until I was furnished with the facts now adduced, I believed such cysts to contain the cancerous secretion thrown out from the different parts of the tumour with which they were connected, and therefore that they were not only subsequent to the formation of the tumour, but an incontestable proof of its virulence, and of the advanced stage of the disease."

Mr. Fearon's case of Mary Smith was also probably one of hydatid, complicated with scirrhus in the second or painful stage. "The skin was become smooth and inflamed, and appeared as if it would shortly break out into a cancerous sore. There were little lumps round the breast, and a gland enlarged in the axilla to the size of a chesnut, which looked as if absorption had taken place. I told her that from the rapid increase and unfavourable appearance of the disease, her chance of a cure from the operation would be extremely uncertain. Her reply was, that she suffered such acute and almost constant pain, that she should run any risk. I operated in the manner already described, removing all the indurated glands. That in the axilla was deeper seated than from the external feel it had appeared to have been. I likewise removed all that part of the skin which was discoloured. Still there was enough left to admit of a perfect approximation of the edges of the wound, which healed by the first intention. On cutting into the breast after it was removed, THERE WERE SEEN TWO CYSTS, one of which contained about two ounces of serum, and the other a curdled matter tinged with blood." Fearon's Treatise on Cancer, p. 79.

THE MAMMARY TUMOUR OF THE BREAST, in Sir Astley Cooper's classification, is ordinarily a disease of persons between the ages of seventeen and thirty, for the most part of good constitutions, and is supposed to depend upon some morbid influence derived from the uterus. Its characteristic symptoms are, 1st, its superficial situation relatively to the glandular part of the breast, excepting when it arises from the posterior surface of the breast; and then it is deep seated, and its peculiar features are less easily discriminated. 2ndly, Its being an extremely moveable swelling, from its being chiefly attached by a portion of tendinous aponeurosis to the glandular structure of the breast, rather than buried within the gland. 3rdly, Its being without pain at its commencement, its presence being for the most part accidentally discovered during the patient's ablutions; and its often continuing to be devoid of pain for many years; although in some cases it does eventually become painful. 4thly, Its being generally not tender to the touch; a rule however not without exceptions, especially towards the approach of the monthly period. 5thly, The extreme slowness of its growth. 6thly, The moderate amount of magnitude which it usually acquires. The exceptions to this rule are of rare occurrence: and 7thly, Its entire freedom from malignancy, it being the fact that it has nothing in common in its character with cancer or fungus hæmatodes.

Tumours of this kind may therefore exist for many years almost in a stationary state, and then disappear by gradual diminution. They usually consist of a number of lobes connected together; but with such intermediate depressions as to give to the entire tumour a conglomerate character. The tumour is contained within a fibro-tendinous cyst, of similar texture to what usually envelops and occupies the interstices of the glandular part of the breast. "It grows from the glandular part of that organ, and remains connected with it by a thin process of a similar structure, which is sufficiently loose and moveable to allow of a free motion of the tumour on the breast. When first laid bare, it appears to be composed of large lobes, like those of the breast: but when more completely unravelled, it is found to be formed of smaller and smaller lobes, similar in form, but differing in magnitude; and after a short maceration in water, the lobes are easily separated. The impression made upon the mind during the dissection of this tumour is, that nature has formed an additional portion to the breast of mammary substance, composed of similar lobes, but differing in structure by the absence of lactiferous tubes. When first opened, they appeared red in the circumference, but white in the interior."

The distinguishing properties of the chronic mammary tumour of the breast are, first, the youth of the patient; its subjects being, with few exceptions, between seventeen and thirty years of age: secondly, the absence of pain, or its inconsiderableness when it occurs, for many years: third, its exemption from being accompanied by any constitutional disturbance: fourth, the remarkably slow progress of its development, it appearing to remain all but stationary for many years: fifth, its superficial situation upon the surface of the breast; for it is

placed rather ON the gland than in it: sixth, its extreme mobility; and, finally, its peculiar LOBULATED feel.

The prognosis of this disease is decidedly favourable. It contains no elements of malignity; and if the patient should be married, and have children, the swelling might be expected to subside during the first lactation.

As the disease is devoid of danger, so its treatment should be very simple; our principal attention being to be determined to the proper management of the functions of digestion. As to local applications, Sir Astley Cooper observes, that "one of the best is the emplastrum ammoniæ cum hydrargyro, if the diseased part be completely indolent: or the iodine ointment may be applied by friction on the swelling, to excite the action of the absorbent vessels." But if there be heat or pain in the swelling, evaporating lotions or simple poultices are most productive of relief. The swelling admits of being removed by a very simple operation; and the disease is not liable to recur, nor to be followed by any serious symptoms. This malady has been illustrated in Sir Astley Cooper's work by brief statements of its facts, including the results of ten different cases. The following is selected for the reader's perusal: "Miss Gardner, aged 34, had a chronic mammary tumour in the right breast. In April, 1828, she first observed a moveable swelling, devoid of pain, seated at the upper part of the breast. It gradually increased, and similar tumours grew out of the external portions of the breast, towards the arm; but they were small, and not very distinct. She has always had a scanty menstruation, and has a slight fluor albus. She has also suffered much anxiety and disappointment. Nothing that has been tried as a remedy has been found decidedly useful. Leeches appeared to increase it rather than to have any beneficial effect. The tumour was removed by an operation on December 4, 1828. On examination of its contents, it was found inclosed in a cyst of condensed cellular membrane; and the swelling was composed of a substance which resembled the breast, and was connected by a stalk to the mammary gland. December 15. The wound is healed." Lest the preceding statements relative to the chronic mammary tumour should mislead the reader, it would seem proper to put him also in possession of the following very important remark, with which Sir Astley concludes his article: "Although these tumours are not, in their commencement, malignant, and they continue for many years free from the disposition to become so, yet, if they remain until the period of the cessation of menstruation, they sometimes assume a new and malignant action." Cooper's Illustrations, p. 63.

OF THE CARTILAGINOUS AND OSSIFIC TUMOUR OF THE FEMALE BREAST.—This conversion of the mamma into a bony substance is a result of chronic, and probably of specific, inflammations of it. The following is Sir Astley Cooper's explanation of such formations. "A gelatine is effused, which resembles that which supplies the place of bones in the fœtus, and of parts of bones in infants.

This gelatine becomes vascular from its connexion with the surrounding parts. It resembles cartilage in its yellowish whiteness, in its compactness, and in its elasticity; and still more in its becoming the nidus of bone; for, as the blood-vessels and absorbents enter it, the latter remove portions of it; whilst the former deposit in the interstices produced by the absorbents the more solid material of bone, viz., the phosphate of lime; and when the tumours composed of this structure are steeped in an acid, the phosphate of lime is removed, but the cartilaginous or gelatinous basis remains. The theory is illustrated by the following case. "Mary Farmer, aged thirty-two years, applied to me for swelling in her breasts, which she had observed for fourteen years. The pain in it was very severe. The skin which covered it felt very warm, compared with the surrounding parts; and it required constant application of evaporating lotions to moderate its warmth. The tumour was excessively hard, very painful before menstruation, but greatly relieved after it. Various applications were tried; as for example, fomentations, poultices, and stimulating plasters; but they neither disposed it to absorption nor suppuration: and as all the means employed to disperse it were quite unavailing, the patient was anxious for its removal. The glands in the axilla being free from disease, as the complaint had existed for so long a period, and the patient's general health seemed to be perfectly good, I recommended the operation as affording the only hope of cure. Upon examination of the swelling after its removal, the larger portion of it had the appearance of that cartilage which supplies the place of bone in the young subject: the remaining part was ossific." Sir Astley Cooper's Illustrations, chap. v.

The following case may be considered important as a constructive illustration of one of the bad effects of pressure on the external mammary arteries. It is entitled, A case of ossification of the mammæ, attended with dropsy of the chest. "A nun was the subject of a most distressing difficulty of respiration, excessive induration of one of the breasts, and great tension of the thoracic region. After having sustained a most painful and protracted disease, she at length sunk under her sufferings. On opening the body, the breast was found exceedingly indurated; and, in fact, presenting the character of a hemisphere of stone, from which it seemed almost impossible to detach the integument. The indurated mass was of an osseous texture. On opening the chest, an immense quantity of a limpid aqueous fluid escaped. Hence the cause of the death." The reporter of the case was of opinion that the patient's life might have been prolonged by the operation of paracentesis. May we not presume, from the result of Mary Farmer's case, that paracentesis might have been rendered altogether unnecessary by a timely extirpation of the breast by excision? Ephemerid. Germanic. dec. ii. an. 6, p. 419. Analogous to the effect of pressure on the thoracic arteries in the above case has been the event, unfortunately, of a great many cases of scirrhoma of the breast treated by artificial pressure, agreeably to the ingenious suggestion of Mr. Samuel Young. See Mr. Charles Bell's Reports of

Cases of Surgery, treated in the Middlesex Hospital and in private Practice, vol. i. p. 1, 4, and 6. Lond. 1817.

Of Enlargement of the Breast, from an excessive accumulation of adipose substance on its cellular tissue.—Sir Astley Cooper reports that on two occasions he has been required to perform operations for the removal of adipose tumours in this organ. In each case the tumour had acquired a very considerable magnitude. "In the first, it began at the posterior part of the breast, and grew between the gland and the surface of the pectoral muscle. In the second, all those lobes of fat which are interspersed between the different portions of the mammary gland, and which serve naturally to augment the size of the bosom, and to increase its prominence, became enlarged, and formed a swelling, which, prior to the incision being made, seemed to involve the whole glandular structure of the breast; but when the operation was performed, the different lobes of adeps, which formed the tumour, could be drawn away from the gland itself." The separableness of the adipose matter from the gland itself is well illustrated by the facts of both cases. A citation of one only, however, will suffice to give the reader a clear idea of the disease. "Mrs. Smith, of Great Yarmouth, Norfolk, was admitted into Guy's Hospital in August, 1805, for an enormous tumour in the left breast. Its circumference was thirty-one inches and a half. It was removed August the 29th, by making first a semicircular incision at the anterior and upper part of the tumour, and then drawing down the swelling. An incision was made along its upper part until the pectoralis muscle was exposed, from which the tumour was dissected from the upper to the lower part, its own weight drawing the cellular membrane to a great extent, so as to render its detachment easy. As the different vessels which supplied it were cut through, the fingers of an assistant were applied to them, and very little blood was lost in the operation: but, in order to complete it, a very large portion of integument, the whole of the breast and the tumour, which was situated behind it, were removed. Several sutures were used, to approximate the edges of the skin, which were also brought together by means of adhesive plaster. The patient soon recovered. The tumour, which is preserved in the collection of St. Thomas's Hospital, weighed fourteen pounds and ten ounces." Sir Astley Cooper's Illustrations, etc. chap. vi. p. 66.

Of the Scrofulous Swelling of the Breast.—This forms the sixth species of tumours, in the second class of diseases of the breast, according to the arrangement of mammary tumours by Sir Astley Cooper. The subjects most liable to this form of enlargement of the mamma are young women of scrofulous constitutions, and such as may have already been affected by enlargement of the cervical absorbent glands. The intumescence is confined to one locality, and occupies only one of the breasts. These tumours are of a remarkably indolent

nature, being scarcely tender on pressure; and, without such pressure, they are almost entirely unattended with pain. They are, moreover, distinctly circumscribed, and very smooth on their surfaces. In size they vary with the state of the constitution, diminishing as that improves, and increasing in bulk as the general health becomes deteriorated.

The diagnosis of this form of swelling of the mamma is founded on two easily ascertainable circumstances; viz., the existence of similar swellings of the absorbent glands in other parts of the body; and, secondly, the absence of tenderness, which is a never-failing accompaniment of chronic inflammation of the breast. "In some parts," observes Sir Astley Cooper, "they possess vascularity; but in others are incapable of supporting vessels. In some parts they are streaked with blood: in others they appear of a yellowish-white colour, like that of suppuration, although still remaining solid. They produce no dangerous effects, and do not degenerate into malignancy. They do not require an operation; and, indeed, it would not be justifiable to remove them by the knife. But I have seen them so treated by an error in judgment with respect to their nature. When cut into after their extirpation, they are found to be composed of a loose curdly fibrine, very unequally organized." Sir Astley Cooper's Illustrations, p. 73. The treatment of the scrofulous swelling of the breast is almost entirely constitutional, and should have for its object the improvement of the general tone of the system, and the invigoration especially of those functions and powers, which are presumed to be more immediately conducive to the attainment of that end: such, for example, are those of digestion, assimilation, and nutrition. The local treatment is of little importance. After the improvement of the general health, there could, at all events, be no objection to the application of a stimulant embrocation or plaster to the tumour, with a view to the excitement of the absorbents of the part to a more vigorous action.

Of the Irritable Tumour of the Breast.—This painful affection of the mamma has been first described in the work already so often alluded to of Sir Astley Cooper. The IRRITABLE TUMOUR is composed of a structure unlike that of the breast itself, although that organ is liable to become irritable without any distinct or perceptible swelling. "Both states of the disease, in the greatest number of examples, occur in young persons between the ages of sixteen and thirty years. I have never witnessed it prior to the commencement of puberty; but I have sometimes known it to occur at a later period of life than the age I have mentioned. When the complaint affects the glandular structure of the breast, there is scarcely any perceptible swelling; but one or more of its lobes become exquisitely tender to the touch; and if it be handled, the pain sometimes continues for several hours. The uneasy sensation is not confined to the breast alone; but it extends to the axilla, to the inner side of the elbow, and to the fingers. It also affects that side of the body, even to the hip. The patients cannot sleep

on the affected side; and the pain is sometimes so severe as to prevent their obtaining any rest when lying upon it: even the weight of the breast, in the ordinary position of lying in bed, is in some instances attended by intolerable pain. Patients also state that heat and cold frequently succeed each other in the breast. And it seems that the pain resembles that of tic douloureux, darting like electricity through the part and through the neighbouring nerves. When the pain is most severe, the stomach sympathizes, and vomiting is produced. The patient's suffering is greatly increased immediately before menstruation, is somewhat relieved during that period, and diminishes after its cessation. There is no external mark of inflammation, as the skin remains undiscoloured. In some cases only a small portion of one breast is affected; in others the whole, and not unfrequently both of the breasts. This painful state remains for months, and even for years, with little intermission; but it has no malignant tendency; and an operation, where there is no distinct tumour, must be entirely out of contemplation."

The actual tumour of the same organ is either another form or variety of the disease, or possibly a different disease, productive of similar symptoms. "Besides this irritable and painful state of the whole or of a part of the breast," proceeds our great authority on this subject, "a TUMOUR is sometimes found occupying its interior, distinctly circumscribed, highly sensitive to the touch, acutely painful at intervals, more especially immediately before menstruation; very moveable; often no larger than a pea, seldom exceeding the size of a marble. Generally one only of these tumours exists; but in many cases there are several similar tumours. Although they continue for years, they vary but little in size. I have never seen them suppurate. They sometimes spontaneously cease to be painful, and sometimes disappear without any obvious cause.

Upon dissection, the tumours now being described are found to be composed of a solid transparent substance, with fibres interwoven in it, but without any regular distribution: and I have not been able to trace any large filament of nerve into them. They seem to be the productions of the cellular membrane of the part rather than of the glandular structure; and they are therefore met with in the cellular membrane of other parts of the body, accompanied by similar painful sensations.

The DIAGNOSIS of this disease is unattended with difficulty; for the pain by which it is accompanied, its tenderness on the slightest touch, or upon pressure of any kind, the suffering which succeeds examination, distinguish it very sufficiently from the hydatid, the chronic mammary tumour, and the scirrhous and fungous tubercle. If, indeed, it be liable to be confounded with either of these, it could only be confounded with the chronic mammary tumour, a variety of enlargement of the breast which sometimes becomes very irritable and sensitive under changes of the constitution. Moreover this disease is met with in persons of a nervous temperament, in whom there is excessive irritability of the system, without an adequate measure of constitutional strength.

The menstrual secretion is generally very deficient; but in some cases I have known it morbidly abundant; and have very seldom seen an example in which it was in all respects regular or healthy. Fluor albus is also a frequent concomitant of this complaint. The immediate exciting cause is generally believed by the patient to be a blow, or pressure from some part of the dress.

The treatment of this disease consists in lessening the irritability of the system, in lulling the local suffering, and restoring the menstrual function to due health and regularity. The best local remedy is to be found in the application of a plaster of equal parts of soap cerate and extract of belladonna, or a poultice with a solution of belladonna and bread. Oiled silk, or hare skin or some other fur, worn upon the breast, aids in soothing and tranquillizing the part by the perspiration which it promotes. When the pain is excessively severe, leeches may also be applied: but if too frequently used, they produce debility, and add to the irritability of the system. As constitutional remedies, the submuriate of mercury, with opium and conium, should be given for a time, with an occasional aperient; and then the medicine which I have prescribed with most advantage in lessening the irritability of the part, is a pill made with two grains each of the extracts of conium and of poppy, and half a grain each of the extract of stramonium and of the extractum e semenibus. This pill may be given twice or three times during the day: but half a grain of stramonium is sometimes too strong a dose, when half that quantity will suffice. To restore the uterine strength, the carbonate of iron, or ammoniated iron, or the compound mixture of iron, may, with any of the anti-irritants just named, be advantageously exhibited in combination with aloes. A hip-bath of sea water, or an artificial salt-water bath, may also be used, of a temperature ranging between a hundred and a hundred and five degrees. No operation is really required or admissible for this affection of the breast.

The only remaining disease of the female mamma which is admitted into Sir Astley Cooper's list of non-malignant affections of that organ, is what he calls ECCHYMOSIS OF THE BREAST. Its symptoms are the following: "It occurs in girls who are in most instances under twenty-two years of age. It is preceded by severe pain in the breast and arm. The extravasation of blood begins a few days before menstruation, and it appears principally in one large spot, as if a severe blow had been inflicted. Smaller and less vivid spots may also be observed in other parts of the breast. It is sometimes a concomitant of an unusually large bosom. The part is exquisitely tender to the touch; and the pain with which it is accompanied passes down along the inner side of the arm to the ends of the fingers. In some cases it disappears in a week after menstruation; but in others it is more severe, and then it may continue until the next period of that function. It looks like the ecchymosis which often succeeds to the application of leeches; or like the extravasation of blood under the skin, which occurs in the arm after bleeding, when the opening in the skin has been smaller than that in the vein. Its occurrence is a striking indication

of the strong sympathy which subsists between the uterus and the breasts; for it is evidently the effect of the great determination of blood to the bosom immediately before the period of menstruation; and it shows an excessive irritability of the constitution as well as the great delicacy and debility of the bloodvessels, which are unable to support this sudden determination which the sympathy in question produces.

This complaint is entirely unattended with danger. Inasmuch, however, as it is accompanied by a diminished, irregular, and sometimes by a profuse uterine secretion, as well as by considerable debility and irritability of the constitution, two objects must be kept in view in its treatment; viz. first, to increase the quantity and to promote the regularity of the menstrual discharge; and, secondly, to increase the strength of the system by the infusion of roses, and the sulphate of quinine, etc." Sir Astley Cooper's Illustrations, p. 85.

Of Malignant Diseases of the Mammæ. Of the diseases incident to the female breast entitled to be thus designated, if we be supposed to admit of a plurality of such maladies, the most important, no doubt, is carcinoma. The earliest form of this disease in the bosom is that of a small hard tumour, differing perceptibly in texture from, and moveable within, the ordinary and natural tissue of the organ. The actual scirrhus may be observed to consist of two different substances; the one hard and fibrous, and the other softer and apparently inorganic. The fibrous substance constitutes the greater part of the mass, and forms irregular partitions within which is contained the softer and less organized constituent of the tumour. The most accurate description of scirrhus, which the author has yet met with, is given by Mr. Wardrop in his general observations preliminary to his edition of the works of Dr. Baillie, p. xxxvi. "The soft or inorganic part of scirrhus," observes that ingenious and experienced surgeon, "is sometimes semi-transparent, of a bluish colour, and resembles in consistence softened glue or horn. In other cases it is more opaque, softer, somewhat oleaginous, and like cream in colour and consistence. The proportion and mode of distribution of these two substances are very different in scirrhous tumours of the same, as well as of different organs, and give great variety of appearance, which may be observed in examining a number of tumours of this kind in different textures. In some scirrhous tumours the fibrous part is most conspicuous, and is condensed into a very solid mass, having the appearance of a nucleus, from which septa come off in various directions, and giving to a section of the tumour a radiated appearance. This is perhaps the most usual appearance of the disease. In some, the tumour is very irregularly shaped, and is nearly throughout an uniformly hard mass, in which scarcely any defined structure can be traced. In some, the fibrous part has a cellular appearance, the cells being filled with a soft pultaceous matter which can readily be pressed out. In others, cysts are formed in the tumour of various dimensions, which generally contain a bloody, or dark chocolate-

coloured fluid. These cavities are lined by a smooth membrane, AND THEY HAVE SOMETIMES A FUNGOUS TUMOUR growing from their surface. It occasionally happens, too, that parts of scirrhous tumours have a great degree of hardness; being converted into a substance resembling cartilage, in which also bony or calcareous depositions are sometimes found. When scirrhous tumours are found in the substance of a gland, their limits cannot in general be accurately determined; the two structures apparently being inseparably connected. In some instances, a scirrhous tumour condenses the cellular membrane which is in its immediate vicinity, and acquires a somewhat sacculated appearance.

Scirrhous tumours pass from the state now described to that of suppuration. The softer substance is transformed into a thin ichorous matter having no resemblance to pus. The disorganization generally begins at the centre of the morbid mass, and extends towards that part of it which is nearest to the surface of the body, or to some of the natural openings. It is in this ulcerated stage of a scirrhous tumour that the disease is denominated cancer. When ulceration has taken place, the tumour does not generally increase in bulk, but is destroyed by a process of ulceration: and as the disease extends, and the ulcerative process goes on, new parts become involved, either through the direct channel of absorption, or by some mode of constitutional contamination; and the disease ultimately proves fatal by the extent of parts which it destroys, and the universal irritation which such a process creates throughout the system."

Carcinoma of the breast is ordinarily a disease of advanced life; it being scarcely ever met with in persons under thirty years of age, and very rarely before the age of forty. Independently of accidental injuries, it most frequently declares itself about the period of cessation of the menses.

In the incipient stage of the disease it has been attended in some few cases by a slight discharge of blood from the mouths of the lactiferous tubes, which open upon the surface of the nipple: and coincidently with this circumstance it often happens, that upon attempting to raise the arm, some amount of pain is felt at or near the insertion of the greater pectoral muscle. Johnson's Practical Essay on Cancer, p. 13.

In a certain proportion of cases, the painful stage is preceded by a hard small indolent tumour for many years. The author recollects the case of a lady who sustained an accidental pressure of no great amount upon the more fleshy part of one of her breasts in consequence of a sudden movement of a child in the arms, THE CHILD in fact which she was then suckling. A hard moveable tumour no larger than a nutmeg was the only immediate result. The indurated part, however, remained, but continued perfectly indolent; and it did not increase nor diminish in size for upwards of twelve years. It then became painful, and advanced rapidly into suppuration and ulceration; and in about fourteen months from the commencement of the painful stage destroyed its subject.

The development of the painful stage is accompanied by a sense of heat and by throbbing. At first the increase of temperature is so inconsiderable as only to

be felt by the patient herself; but as the disease advances it becomes so intense as to create a heated atmosphere to some distance from the affected organ. The peculiar character of the pain of cancer of the breast is that of darting or lancinating, which indeed are the epithets generally employed by patients to describe it. The scirrhous tumour has usually its first locality at some depth in the substance of the organ. The tendency of its growth is in the direction of the nipple towards the surface. In its progress in that course, it encounters the lactiferous tubes, and the surrounding cellular tissues and integuments, which it implicates in such a manner as to produce the characteristic retraction of the nipple, and puckering of the skin in its vicinity, which constitute one of the most decided pathognomonic symptoms of the disease. At this period of the malady, the skin becomes extensively and inseparably united to the subjacent tumour; and shortly afterwards it may be observed to have acquired a slight tinge of redness. The other characters of inflammation present themselves about the same time, sometimes more or less mildly and consecutively, but generally with considerable intensity. After this, the whole surface of the swelling exhibits a purplish shining appearance; which it will retain with little change till ulceration is ready to supervene. From the great exacerbation of the symptoms which usually takes place about that time, the constitution becomes more manifestly implicated in the disease. At length after sustaining much painful tension from the pressure of the tumour and rapidly increasing determination of blood to the part, the integuments give way to ulceration, and the patient experiences temporary relief from the escape of a small quantity of ichorous or sanious matter, the first produce of the ulcerative process. For a longer or shorter period the ulceration chiefly advances by extension superficially. After the lapse of two or three months, in many cases at an earlier period, the carcinomatous ulcer assumes its proper characters, and penetrates deeply towards the more central parts, while at its circumference the edges become hard, elevated, and everted. The surrounding skin puts on a livid aspect, and from the surface of the sore there is a considerable discharge of an irritating quality. In some few cases the first produce of the ulceration partly consists of laudable pus, and partly of the characteristic sanies of cancerous ulcers. The odour of the discharge impresses the organ, of smell with a peculiar but indescribable sensation. In extensive ulcerations, parts of the ulcerated surfaces may be observed to separate and fall off by a sloughing process, while new and luxuriant granulations are at the same time observed to be produced in other parts. "These changes upon the surface of the sore sometimes appear to alternate with each other; and in their further progression give rise to such hæmorrhages from erosion of bloodvessels as ultimately prove fatal to life."

But cancer of the breast does not always terminate in the same manner: for it has been known to prove fatal, not only independently of any loss of blood, which indeed is the more frequent event, but also without ever arriving at

the stage of open or ulcerated cancer. In certain cases, which however are not frequent, the disease is propagated by juxta-position of parts, until it reaches either the cartilages or the periosteum of the ribs; and from these it is in like manner propagated to the substance of the lungs. In other cases it would seem to be conveyed by lymphatic vessels directly communicating with the ulcerated breast.

The glands in the axilla become enlarged at different periods of the disease; in some cases so early as the commencement of adhesions between the tumour and the subjacent parts; but in others the enlargement of the axillary glands does not present itself until the breast shall have been for some time ulcerated; whilst, in a few rare cases, the glands in question have not swelled at all, although the disease has been propagated to those situated immediately above the clavicle, and in other respects has advanced until it has destroyed the patient.

Sometimes cancer in the breast has been attended by a swelling in the arm, from the effects of the disease on the glands of the axilla. Home's Observations on Cancer, p. 59. Another case of this description is given by Sir Everard Home, in which the swelling of the arm subsequently to the operation was supposed to occasion the patient's death. A woman, aged forty, had a cancer in the breast, which extended to the glands in the axilla: but, as far as was to be discovered by external examination, the diseased glands were within reach, so as to admit of their being extirpated. This case occurred in the year 1775, when surgeons WERE MORE SANGUINE IN FAVOUR OF THE OPERATION FOR THIS DISEASE; and ventured to perform it in cases which now would be considered much too far advanced to admit of it. Mr. Hunter performed the operation, and found a greater number of glands diseased than had been expected. He was, however, able to remove all that had undergone any alteration in their texture, which included the whole axillary cluster. To come at them, he dissected round the axillary artery, which was laid bare for an inch in length. A few days after the operation the arm began to swell, and increased in size every day, until it became so large as to be attended with violent pain, from the great tension of the skin; and it remained in that state till the patient died, which was about three months from the time of the operation. The disease was found to have extended itself to the ribs, and to the muscles of the chest. A case of cancer of the breast is quoted by Sir Everard Home, in which the contamination of the skin produced small tumours over a great part of the body. p. 66. A lady, about fifty-eight years of age, had a tumour in the breast, which had been gradually increasing in size for about nine or ten years, and had affected the glands in the axilla; several of them being considerably enlarged. But the tumour itself made slow progress. The chief peculiarity of the case was the fact, that in the neighbourhood of the tumour, which was well characterized, there were several carcinomatous tubercles in the substance OF THE SKIN, about the size of small peas. At the time Sir

Everard saw the patient, these were not confined to the neighbourhood of the tumour, although about nine or ten months before, they were seen only there. They gradually extended all over the body, so as to occupy the side not only of the affected breast, but the other side also, together with the back and shoulders. They were nearly of the same size in these different situations, but rather larger, near the seat of the original disease. In no place were they close to one another, but commonly an inch or more distant. They gave considerable uneasiness, and the patient's general health was much impaired. The disease in the breast had become extremely painful. The stomach with great difficulty retained food, and occasionally the patient had severe retchings to vomit, and in a few months she died, without any considerable change having taken place in the local appearances.

The following case illustrates the important fact, that the failure of the operation of extirpation of the breast to eradicate the disease, may nevertheless not be followed by a fatal event. "A woman, about fifty years of age, had a cancerous tumour in the breast, which had not increased to a large size, nor produced any change in the state of the glands of the axilla: it was therefore thought advisable to have recourse to an operation. This case occurred in the practice of Mr. Hunter, who extirpated the tumour. During the healing of the wound, which was tedious, about four weeks from the period at which the operation was performed, a small knot appeared on the edge of the skin, not much larger than a pin's head. In two days a second was observed, about three quarters of an inch from the other. These were increasing very rapidly in size, and were on that account destroyed by caustic. The whole healed and continued sound. The patient survived about seven years, and eventually died of a dropsical complaint. "This is the only case I have known," observes Sir Everard Home, "in which there was no recurrence of the disease, after it had produced these cancerous tumours on the skin; and it is highly probable that if the two small lumps had been left for a few days longer, they would have contaminated the surrounding skin beyond the reach of an operation."

It seems proper to present the reader with one example of extension of the disease of the interior of the thorax. "A lady had a tumour in the breast which appeared to be cancerous, and it was removed: but as the patient had an uncommon affection of her breathing at the time, and the lump was very large, it was suspected that they were both symptoms of the same disease. Inasmuch, however, as the operation would give her the only chance of recovery, it was performed. No visible disease remained after the operation; and the progress of the wound went on very well: but the affection of her breathing became worse, yielding to nothing, but admitting of being alleviated a little by musk. In a month after the operation the patient died. Upon examination after death, every part connected with the operation was found in a healthy state. No lymphatic glands were diseased. But the lungs on both sides were everywhere affected, appearing like a solid mass, adhering universally to the ribs.

Upon cutting into them there was a number of tumours of different sizes, many of which were not larger than peas, and were perfectly distinct from the surrounding parts: others were much larger. Where they were small, the natural texture of the lungs could be distinguished: but where they were large and had arrived at a species of suppuration, the whole of the lungs were broken down into one mass, and matter was found in the trachea. The tumours, which were of the size of a small egg, or even somewhat smaller, had the appearance, upon being cut open, of having been made up of a number of parts, in substance between jelly and cartilage, not unlike the internal structure of a shaddock. This was different from that of the smaller tumours, which were more fibrous. As all these bodies appeared to be the lymphatic glands in the lungs, it shows the manner in which they were affected when attacked by cancerous action. The tumours in the mediastinum were the largest, and adhered closely to the surrounding cellular substance, which was diseased; but those in the lungs were more detached and smaller in size." Home on Cancer, p. 76.

Of the Diagnosis of Cancer of the Breast.—We have already seen that this important organ is subject to a considerable variety of diseases, competent to affect its form and volume, and even the soundness of its tissue, independently of cancer, its greatest and most remorseless enemy. Sir Astley Cooper has most materially contributed towards the illustration of the diagnosis of cancer by his luminous and graphic descriptions of not less than NINE OTHER DISEASES, every one of which it is probable may often have been mistaken for that malady. Hence we must recognise, in the absence of the ordinary characteristic symptoms of other diseases so admirably analyzed and described by Sir Astley, one most important element of the diagnosis of cancer. The more positive facts, which taken together, or severally in given combinations, might be assumed to indicate the presence of the disease, are, 1st, the sudden or unperceived formation of a small hard tumour loosely situated within the glandular substance of the breast; 2nd, the comparative indolence of such tumour for an indefinite period of time, the affected organ in the mean time sustaining no manifest change in its appearance; 3rd, the eventually gradual development of the painful stage of the malady; 4th, the age of the party already or about to become its subject, viz., that which is considered to mark the second great crisis in the physical history of woman; 5th, her constitutional state in respect to the function of menstruation; 6th, the coincidence of the disease in the breast with inordinate irritation of the uterine system; 7th, the scirrhus of the breast having been preceded by dysmenorrhea or other irregularities of the catamenial function; 8th, the peculiar character of the pain of a truly scirrhous or cancerous tumour, which in the uniform language of all descriptions of it has been distinguished by the epithets, shooting, pricking, stinging, lancinating, piercing, with an edged or pointed instrument, etc.; 9th, the almost stony hardness

of the scirrhous mass after it has arrived at an advanced period of the second or painful stage; 10th, the smooth and shining appearance of the greater part of the surface of the tumour a short time before the rupture of the integuments; 11th, the retraction of the nipple towards the interior of the organ, and the puckering of the integuments immediately surrounding it; 12th, the contraction of adhesions between the glandular tissue of the breast and the subjacent parts, in consequence of which its entire mass becomes permanently fixed to a limited locality; 13th, the ichorous produce of the ulcerative process and the characteristic fœtor of that sanies, which is unlike the odour of any other substance in nature; 14th, the enlargement of the axillary glands, subsequently to the establishment of the ulcerative stage of the disease; and, in some cases, before that process becomes manifest externally: 15th, the eventual extension of the ulcer deeply into the substance of the scirrhous tumour; the frightful excavation, in the mean time, having for its boundaries hard, elevated, and everted edges: 16th, the anxious countenance and the peculiar complexion of the patient; in short, the livid, dingy hue, which characterizes the presence of advanced cancer in both sexes, and in any part of the body.

During the indolent stage of the disease, the diagnosis must even yet be considered very difficult and uncertain; not to add that sometimes, during the dodging development of the second or painful stage, it is found next to impossible ABSOLUTELY, AND WITHOUT DOUBT OR QUALIFICATION, to pronounce a distinct and well-founded opinion on this subject.

A friend and connexion of the author came to London about six months ago, to seek advice for a suspicious tumour of one of her breasts. She saw two of the most eminent surgeons in town. She waited on each accompanied by her brother, who had been educated for the profession, to whom therefore a distinct opinion might have been freely given. The tumour had existed in an indolent stage for many years: it had recently become painful. When the patient was in London, it advanced rapidly into inflammation and suppuration Even after this result, neither of the above gentlemen felt himself authorized to give a positive opinion of the nature of the malady. The patient returned into the country, and the tumour is at present in a moderately quiet state. It should be added, that the lady's sister died of cancer of the breast about eight years ago.

When the diagnosis shall have been established, and it is correctly ascertained that carcinoma is the actual disease, THE PROGNOSIS IS EXCEEDINGLY EASY, inasmuch as, with certain rare exceptions, applicable almost exclusively to the first stage of the disease, it is UNFAVOURABLE; amounting to an almost absolute certainty of an ultimately fatal event. But the infrequency of the exceptions here alluded to is a matter which has been strongly disputed by a certain class of sanguine and self-complacent writers; and by persons who might not have taken adequate pains, or possibly not possessed sufficient knowledge or experience, to form for themselves a correct diagnosis. The discord-

ance of professional opinions on this subject is indeed so great as to require explanation. Mr. Nooth, at p. 37 of his Observations on the Treatment of Scirrhous Tumours of the Breast, expresses himself as follows: "My own experience, which has been extensive during thirty years' practice, justifies me in saying, that a small fraction only, NOT MORE THAN ONE IN THIRTY PATIENTS, ever had any return of the disease, in any shape whatever, after they had submitted to the operation.

The impression left on the perusal of Mr. Fearon on Cancer is such as to lead to the belief that, HIS PRACTICE ALSO, in cases of that malady, was attended with extraordinary success. It seems to have been the principal object of that gentleman's publication to recommend his own peculiar mode of operating, to which he principally attributed the success of his method of treatment. That method of operating is now in general adoption: but it may be interesting to the reader to be made acquainted with the simple incident which originally suggested it. "In the year 1778, Dr. John Sims, a very skilful physician, advised a patient under his care to have the operation for the trichiasis, or inversion of the under eyelash, performed. She consented, and applied to me for that purpose. The flaccidity and redundance of the skin of the under eye-lid were so great that I was obliged to cut away a very large portion of it, in order sufficiently to retract the under cilia, and effectually to turn the hairs outward; so that they might not in future irritate the eye. Having removed a sufficient quantity, near an inch in the middle or broadest part; I was very careful to bring the opposite edges evenly and perfectly into contact, and to retain them in that situation by strips of adhesive plaster and a proper bandage. As I had taken very great pains in applying the dressings, and the patient continued perfectly easy, I did not attempt to remove them for three days. On their removal, I was exceedingly pleased to find, that a perfect union of the edges, from one end to the other, had taken place, agreeably to my intention and wishes. There was a small serous discharge, but nothing like pus or digested matter; and the secondary union was completed in a few days. The foregoing case made a strong impression on my mind; and I inferred from it, that the principle might be applied in other operations to very great advantage, and resolved to practise it the first opportunity. Soon after, I had occasion to remove a diseased testicle, very much enlarged. I was anxious to make the experiment; and accordingly, instead of following the usual method of filling the void space from which the testicle was taken with dry lint, I brought the edges of the incised wound perfectly into contact, and retained them in that situation. The event greatly exceeded my most favourable expectations; for, although there was in this case a considerable cavity, and consequently a great quantity of loose integuments, yet, by carefully bringing the parts into contact, laying aside the interposition of dry lint or any other extraneous body, a perfect union throughout the whole took place, as in the above-mentioned case. The success which attended both these cases, made me resolve to carry the principle still farther,

by applying it to the operation of amputation of the breast. I embraced the first opportunity which offered, and the event proved equally successful. The patient was only two days confined to her room; and the wound perfectly healed in ten days."—Fearon's Treatise on Cancer, p. 11.

Mr. Hill, of Dumfries, in his Cases in Surgery, chap. i. p. 3, states that, of the first forty-five patients on whom he operated, only one case proved unsuccessful. In three more cases, the cancer broke out again in different places; and a fifth was threatened with some tumours at a distance from the original cancer. All the rest continued sound as long as the patients lived, or, at least, up to the date of Mr. Hill's publication in 1772. Of the subsequent thirty-three patients on whom he operated, one lived only four months; and, in five more, the cancers broke out afresh, after having been once healed. It appears, therefore, that not more than one in seven relapsed.

Sir Everard Home, in his Observations on Cancer, has published twenty-two cases of cancer of the breast. Of this number, eight were allowed to run their course unmolested. Of the remaining fourteen that were operated upon, only five proved completely successful. There were, indeed, two more, of which the event was unknown.

But what shall we say of the extraordinary want of success in Dr. Monro's practice, as published by him in his Histories of Collections of Bloody Lymph in Cancerous Breasts? It was stated by that celebrated professor, Edinburgh Medical Essays, vol. v. art. 32, that, "out of nearly sixty cases of cancer, at the extirpation of which he had been present, only four patients remained free from the disease for two years; and of these more fortunate subjects, three had occult cancers in the breasts, and the fourth had an ulcerated cancer of the lip." It is very probable that Dr. Monro's connexion with the University of Edinburgh, and the high reputation which he enjoyed as a practical surgeon, might induce families and members of the profession to apply to him in the last resort, which at least would go some way to account for his remarkable want of success in the treatment of cancer. Added to this, we have the testimony of Mr. Johnson, that he possessed a well-written manuscript of Dr. Monro's surgical lectures, from which he had collected that, in his opinion, the professor had recommended the operation TOO INDISCRIMINATELY, and without prescribing the necessary limitations. Johnson's Practical Essay, etc., p. 100. Moreover, the reader, after having just perused Mr. Fearon's simple account of the introduction by him of his new mode of operating, will readily advert to the fact that, in Dr. Monro's time, the wound, instead of being united by the first intention, was allowed to heal, if it would heal at all, by the tedious process of granulation. But this is not all that Mr. Johnson has been able to report on this subject, in consequence of having perused the professor's manuscript; for he further observes, that Dr. Monro had an idea that, by keeping up a discharge from the breast, the return of the disease would be prevented; and that with this view he directed the sore, when reduced to about

the size of the palm of the hand, to be kept open as an issue for the remainder of life. To promote a discharge from it, Dr. Monro accordingly advised the sore to be occasionally dressed with the common caustic, added to as much black soap as would give the compound the consistence of an ointment.

When the operation proves only partially successful, competent only to arrest the progress, but not to cure the disease, its return or re-appearance is usually indicated by the discovery of a new induration in another part, or of a disposition to ulcerate, and to furnish an oozing discharge at or in the immediate neighbourhood of the cicatrix left after the operation. In such a case a dangerous relapse may be certainly calculated upon.

It is moreover a general opinion, and generally a correct one, that the axillary glands being found indurated some time subsequently to extirpation, should be considered as an indication of great danger of relapse: cases however are recorded of positive exception to this result.

Certain cutaneous affections, presenting themselves shortly after the extirpation of a scirrhous breast, are often to be considered as no dubious harbingers of a relapse. "I observed at first that I did not see Mrs. M. for some time before the day of the operation. Upon talking with her immediately on my arrival at her house, I found the remains of an eruption on her skin, which she attributed to a former surfeit; but about which I could not help expressing my fears to the gentlemen in attendance with me, that it had arisen from an unfortunate absorption, which of itself might possibly counteract our success, inasmuch as I had in several instances seen an erysipelas about the bosom with general efflorescence, mark that circumstance, and prove a certain fore-runner of impending mischief and danger. This remark I submit to future attention, as an object highly worthy of notice; for although the glands in the neighbourhood of a cancerous tumour are often found affected, without any symptom whatever to denote the time when the absorption had taken place; yet I have never seen the circumstance above mentioned, without an almost immediate change for the worse in every respect. R. B. Cheston, Gloucester, in a letter to Mr. Fearon. See Fearon's Treatise, case xix. p. 126.

The prognosis in cancer might obviously have reference to the mildness, intensity, and stage of the malady and the contrary. On these facts, and also perhaps on that of its having been a disease of frequent appearance in the patient's family, must depend not only the final issue of the case, but also the probable duration of the patient's remaining life antecedently to that event.

Of the Treatment of Cancer of the Breast.—With respect to the general treatment of cancer of any part of the body, the subject has been already discussed in our article Cancer of the Uterus. What furnishes an inducement for offering a few additional observations on the treatment of cancer of the breast more especially, is the greater accessibleness of that organ to surgical remedies, as well as to an early examination, and a comparatively early

discovery of its maladies. Local predisponent causes may often be removed, or greatly diminished in their influence, by the use of leeches, cooling lotions, and other topical applications of a sedative nature. The ability to ascertain pretty accurately the nature and amount of development of disease in the breast would naturally suggest to a competent practitioner the best known means for subduing it, or mitigating its severity by constitutional remedies.

But the greatest advantage of its position is the ample opportunity which it affords for judging soundly and dispassionately on the expediency in any case of having recourse to the aid of surgery.

In deliberating on the question of amputation, it was formerly an important item of the inquiry whether a part or the whole of the organ, or in other words, whether the whole of the disease or the whole of the breast, should be disposed of in this way. The most eminent surgeons of the present day are pretty well agreed, it is presumed, in their preference of the latter method.

Of the different Modes of Operating for the Removal of Parts or of the whole of Scirrhous Breasts.—The advantages attending the operation by the knife are such as to give it a decided preference in all cancerous diseases. It is the only mode which is capable in the more advanced state of the disease of removing the contaminated parts to a great extent; and in doing it, the surgeon is enabled to take away with great precision every part he thinks liable to have been affected. When the operation is over, he can examine the diseased part with all desirable accuracy, and see whether it is everywhere surrounded by healthy parts; and if not, by referring to its natural situation, he can remove any part which may give him any cause to suppose that it is contaminated. The skin after such an operation is in a loose state, and admits of its edges being brought together; so that the wound may always be much diminished in size; and in very many instances the cut edges may be brought together like those of a simple incision. The operation is only of a few minutes continuance; and the moment it is over, the parts are in a state to commence the process which is necessary for their recovery; and in the course of two or three weeks they are entirely healed, even where the disease has not been completely removed. In earlier times, when the knowledge of cancer was more imperfect than it is at present, an idea was entertained of its growth being similar to that of a vegetable; and it was therefore thought that, unless it was taken out by the roots, the disease was not completely removed. It was found that very active caustics were capable of deadening the whole tumour, which is always more or less of an irregular form; and when the diseased part was thus brought away, the projecting portions were considered as the roots of the cancer; and the proof of its being completely eradicated was, that the sore readily admitted of being healed. Any recurrence of the disease from the contaminated parts which had not been destroyed, was supposed to arise from the constitution having been in a diseased state, and not

from any failure of the action of the caustic: and in this way the original idea of its being a constitutional disease was most probably formed. The fact is, that diseased parts have less powers of supporting themselves than healthy ones, and therefore are more readily destroyed; so that a powerful caustic acts to twice the extent in a diseased part in proportion to what it does in a natural one; and an indolent tumour can have every part of it deadened with impunity by means which would produce a violent inflammation upon the common skin.

"It was therefore by no means an unfair conclusion, till it was contradicted by experience, that such applications as were capable of deadening every part which was in a diseased state, without acting upon the surrounding healthy parts, were to be preferred to the operation by the knife; and it is within my own remembrance that such an opinion was general in London. Since that period two facts have been ascertained, which prove that when the tumour has become cancerous, such caustic applications are incapable of removing the disease entirely; the one, that when the poison is once formed, the contamination proceeds, and extends beyond the diseased alteration of structure; the other, that every thing which irritates the diseased part increases its action and its power of contamination: and, in fact, all regular practitioners have laid aside the arsenical applications to cancerous tumours in the breast, in consequence of finding that the disease was rarely removed by them. The caustic applications which have been usually employed for the destruction of cancerous tumours are, arsenic, corrosive sublimate, and the actual cautery. As these are also used for the purpose of removing other tumours, whose structure prevents the knife from being employed, I have had frequent opportunities of making observations on their comparative effects. The only preparation of arsenic which I have used, is equal parts of the white arsenic and of sulphur. This acts as a powerful caustic, and appears capable of destroying any tumour which has not acquired the disposition to throw out a fungus. The sloughs formed by each application are found to be much in proportion to the quantity of the powder applied. By this method I have removed a large tumour in the cheek, which appeared to be assuming the immediately previous state to its becoming a cancer.

Corrosive sublimate appears to act both locally and constitutionally, and therefore so far similarly to arsenic. Its local effects are, however, less powerful; parts being destroyed by it to a less extent: and the constitutional effects from absorption are more like those common to the different preparations of mercury than to those of arsenic.

The actual cautery is at present almost entirely disused in surgery, excepting in cases of diseased bones; where it is employed to produce death in the part, and in that way to put an end to the disease. It is a much milder application than either of the above caustics, gives less pain while acting locally, and produces no constitutional disturbance; and when it is necessary to keep at bay a fungous excrescence the growth of which may not be very luxuriant, I should prefer it to the others; from a belief that it does not, in the same degree, hurry

on the diseased action of the tumour. This account of the effects of caustic applications is here given, to show in what they differ in their effects from those of the operation by the knife, and, when compared with it, what their disadvantages are; although, in other tumours, of a less malignant nature, they may be employed with success." Home's Observations on Cancer, p. 178.

Before we conclude the subject of treatment of cancer of the breast, it would seem proper to make a brief allusion to a practice which was introduced about twenty years ago, by Mr. Samuel Young, with the sanction and under the patronage of the late Mr. Whitbread: viz., that of the application of pressure to the part affected, in a pamphlet entitled, "An Inquiry into the Nature and Action of Cancer, in order to establish a Principle of Cure by Natural Separation." But, considering the necessarily confined application of such a principle of cure in a disease so complicated, so variously acting, so indefinite in extent, and so involving parts necessary to life itself, the idea of a more extended effort for the removal of the disease by mechanical pressure suggested itself to Mr. Young; "and so far back as 1809 it was made available," asserts Mr. Young, "and in two cases successfully employed."

In May 1814, Mr. Young recommended his practice, BY PRESSURE, to the late Mr. Whitbread. "A correspondence followed," we are informed by the latter gentleman, see Mr. Whitbread's Address to the Governors of the Middlesex Hospital, "which ended in my request that he would come into Bedfordshire, to give his advice to a near relation of my own afflicted with a disease called cancerous, and to apply his mode of treatment, if approved of by the physician, whose opinion, from my long experience of his general science, talents, and liberality, I had determined to take." The practice was put to the test of several trials in Bedfordshire, in the course of about four months after the date of Mr. Young's letter to Mr. Whitbread. In the course of the subsequent year, it was introduced through the influence of Mr. Whitbread into the Middlesex Hospital. In the succeeding year to that, viz. 1816, it was made the subject of a special report by Mr. Bell. The following are the facts which constitute the substance of that report; viz. 1st, That rest and support are necessary to the cure of surgical diseases; 2nd, that they, the surgeons of the Hospital, and as the author presumes, Mr. Young himself, had been anticipated in the practice proposed by a method already existing of curing what is called cancer of the lip; 3rd, that specific action is not subdued by pressure, and therefore that the mode of treatment by pressure cannot be a cure for cancer; 4th, that it is not desirable that absorption of the matter of cancer should take place; 5th, that pressure accelerates the coming on of the last fatal symptoms in scirrhus of the breast; 6th, that pressure brings the diseased mamma earlier into contact with the muscles and ribs, and thereby accelerates the fatal affection of the chest; and, 7th, that the idea of the use of pressure in cancer is not new.

OF FUNGUS HÆMATODES OF THE BREAST.—The author is not sure that he has ever seen a case of true fungus hæmatodes, or CEREBRIFORM cancer of the

breast. In this respect his experience, which is thus absolutely negative, pretty nearly coincides with that of Mr. Wardrop. "In the description," observes Mr. Wardrop, "which Mr. Hey has given of fungus hæmatodes, three cases are mentioned where the female breast is said to have been affected by it. In none of these cases, however, nor in two others which I carefully dissected, and which appeared to be very analogous to those mentioned by Mr. Hey, was there that MEDULLARY structure in any part of the tumour, which has been found to be a constant appearance in fungus hæmatodes, in all the other organs where it has been met with: I should therefore be led to doubt of the nature of the disease in the cases alluded to, had not fungous tumours arisen from the cicatrix; whilst being aware, at the same time, that a very considerable difference may arise in the appearance of this disease in different organs; the natural structure of the mamma being as unlike that of the sound eye-ball or liver, as the same disease in these organs." Observations on Fungus Hæmatodes, by James Wardrop, p. 171. Edinburgh, 1809.

The author does not think it necessary to offer any remark on the subject of the treatment of the disease described by Mr. Hey as cases of fungus hæmatodes of the female breast. The more general facts of that malady have been already noticed under the malignant diseases of the uterus.

END OF THE FIRST DEPARTMENT OF THE WORK.

# SECOND DEPARTMENT

OF

# THE WORK.

# SECOND DEPARTMENT

## LIFE WORK.

# OF PREGNANCY AND ITS CONSEQUENCES:

INCLUDING

## THE DISEASES OF THE PUERPERAL STATE.

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The unimpregnated uterus has already been sufficiently described. We have now to consider the important changes which that organ undergoes in consequence of impregnation. The phenomenon of reproduction presents remarkable differences as to the manner and means by which it is accomplished in different animals. In some it is so simple that, under given circumstances, a single agent is all that is necessary to give origin to the new being; as is the case with the polypus, an animal indeed so simple in its structure as to be generally supposed to consist of only one cavity. It has, however, the power of propagating its species; which it accomplishes in two ways; namely, naturally and artificially. At a certain period of its existence it sends out from the sides of its cavity, that is, from the sides of itself, a number of little processes, each containing a cavity communicating with the general cavity. After a time, these processes drop off, and become so many independent polypi, to be endowed in their turn, like their progenitor, with the power of propagating others in the same way. The artificial mode of propagating polypi is, by cutting an individual polypus into different parts. Each of the parts becomes an independent polypus, with the difference only, that it does not acquire a size quite equal to that of the parent polypus. This mode of propagation would seem to have some analogy to what we observe to take place in the cultivation of our most valuable esculent, the potato. A potato, it is well known, has a number of specks on its surface called eyes. Each of these, if cut off with a sufficient portion of the farinaceous substance, is capable of producing a whole family of potatoes. So also it would seem to be with the polypus. If the cuttings are of sufficient age to admit of their throwing out a process each, that process will grow, become a polypus, and throw out others in its turn.

Again, there are animals which propagate in putrid waters; and if vinegar, or paste, be kept until it becomes putrid, creatures like eels will be seen propagated in it. These are examples of what has been called equivocal generation, a peculiar mode of propagation by which animals are by some supposed to be produced, not by the ordinary mode of a congress between male and female, but by some presumed plastic power in the sun and other physical influences. The fact is, that we are not sufficiently informed of the nature of equivocal generation. This unsatisfactory hypothesis is often made available, no doubt unnecessarily and violently, to account for the propagation of insects, such as maggots, flies, spiders, vermin of all sorts, etc. Even frogs, according to the abettors of the theory, are produced by the heat of the sun warming, agitating, and impregnating the dust of the earth, the atmosphere, muddy and stagnant waters, the exuviæ of vegetables, and the putrid parts or dead carcasses of animals. This doctrine was first started in Egypt, to solve the difficult problem of the original production of men and of other animals out of the earth, by the influence of the sun's heat. In consequence of possessing more accurate information in matters of natural history, the moderns have almost universally rejected it.

The theories of Buffon and Needham, in modern times, may, however, be considered as improvements or modifications of it; but more or less moulded and fashioned to the system of what has been called EPIGENESIS. Of that system the best explanation or development is contained in an Essay published at Halle in the year 1759, entitled Theoria Generationis, Auctore C. F. Wolf. It explains the mode of growth and formation of parts in organized structures by the action of a power which the writer calls VIS ESSENTIALIS, without any mould or model. This power, together with that of fixation or coagulation of juices, accomplishes the whole work of formation. "The heat of the air in the case of plants, and the functions of the heart in animals, are accessory causes of generation. The primordial elements are globules, so minute as not to be reducible into smaller component parts, inasmuch as neither arteries nor veins, nor even a heart, can be discovered to exist in an ovum of recent vitalization; in AN EGG, for example, of twenty-four hours' incubation." At the stage of development, however, in the example just noticed, the VIS ESSENTIALIS of the theory, different from the power of the heart, is observed to begin to act; and in the matter forming the disk of the area umbilicalis, grooves are seen to form, which gradually grow red, so as to constitute vessels for containing and circulating a specific animal fluid. These at first present themselves in the form of large intervals bounded by dots or spots of globular matter; the globular matter gradually increasing in its extent in proportion to the diminution of length of the intervals. At length membranes are formed around these grooves or passages. The first state of all parts is that of being fluid and inorganic; the formation into vessels being a subsequent stage of evolution. Trunks are eventually formed for the branches, and at last the great central engine of the circulation, THE HEART, is added to the trunks. New parts are formed from materials within reach, as supplied by the

adjacent structures already fabricated; and thus the several organs of the new animal make their appearance in a certain, determined, and beautiful succession.

Haller, who was one of the most successful experimenters of his day in matters of physiology, has very successfully refuted and, in some of its points, effected the demolition of this theory. He clearly demonstrates, that parts in fact exist, distinguished by form and other characters of organization, when superficial observation might lead us to infer the mere existence of an inorganic homogeneous mass. The transparency of the whole prevents the outlines and distinctions of parts from being cognizable by our power of vision. But coagulation by acids makes these distinctions and outlines visible. Because the original gelatinous mass which forms the animal seems to have no obvious structure nor any distinguishable component parts, we are therefore not entitled to conclude, that such parts do not exist. Spirit of wine poured on the living gelatine, on the contrary, so sets and hardens it, as in one moment to give it the visible character of an indisputably organized structure, presenting the several tissues of fibres, vessels, and viscera, where before there seemed to be only a transparent concrete, in a fluid or semi-fluid form. There is no essential power in alcohol to model rude matter into organized structure. But the transparency of the mass, no doubt previously organized, being destroyed by the alcohol, the outlines and distinctions of the organization become in consequence cognizable to our senses. We cannot, on the principles of the theory of epigenesis, see how this power, THE VIS ESSENTIALIS, can form such different parts always in the same place, relatively to others, in one animal and according to one archetype, if the materials be inorganic, mutable, and susceptible of any or of every configuration. Why should this same homogeneous matter, be it ever so plastic, produce, without error, a chicken in the common fowl, a pea-chick in the pea-fowl, and a human fœtus in the human female? Nothing seems deducible from the principle of the theory, beyond a mere dilating force acting progressively. This force of dilatation might indeed account for a mere extension of parts in all directions, but by no means accounts for a progressive assumption of such specific forms as are essential to the constituency of organized structure. "We cannot conceive," to adopt the language of Haller, "of any power, unless guided by a principle of intelligence, that can act on inorganic materials in such a manner as to mould them into bones, muscles, vessels, and viscera, and so to arrange the relative positions and functions of each as to make every part and element of the structure, subservient to the uses and perfection of the whole."

To estimate the value of this theory, let us examine with attention the organization of a single organ, and take for our example that of the eye. How can so exquisite and complicated an organ be moulded, by any force of mere expansion, into so many consecutive layers of structure, as we observe it to consist of; all differently fabricated, admitting at one part of the transmission of light, that part being perfectly transparent, evidently for the purpose of so

transmitting luminous rays, but everywhere else surrounded by opaque structure, so admirably constructed and arranged, that in millions of men and animals the rays of light must constantly converge on the retina? How does the vis essentialis, or the mere power of expansion, account for the NATURALLY transparent character of the cornea, and the equally opaque character of the sclerotica? The physical cause assumed can surely know nothing of light, nor of the laws by which it is refracted, although we must suppose it to have adapted all the parts so accurately, even to the hundredth part of a line, as to ensure the concentration of the rays of light into a proper focus, and their ultimate reception by the retina. Again, this supposed unintelligent cause has furnished the eyes with eyelids and eyebrows, and has given to the iris a power of dilatation by which the organ is accommodated to the quantity of light required for perfect vision, in any possible relation of the organ to its objects!

Buffon supposes a certain proper quantity of nutritive matter to be present in every part of the bodies both of the male and female, when respectively competent for prolific intercourse; and the superfluous particles of this supply, viz. those not required for the purposes of nutrition, after having been moulded in different parts of the body, to be thence determined to certain reservoirs in the genital organs of either sex, to furnish for each a seminal fluid possessing the prolific powers required for its specific uses in the economy of reproduction. The seminal fluid of either sex is thus ensured to contain the particles necessary to form an offspring of the same sex. The generative organs, according to this theory, are made the basis of the new animal; and these are accordingly first formed out of properly moulded particles of seminal fluids specially derived from the respective genitals of both parents. The other organic particles are arranged around them as a centre, according to the order which they hold in the body from which they were produced. That sex prevails of which the particles from the genitals are most numerous. No proof being offered for the truth of any part of this theory, the illustrious name of Buffon should not induce us to engage in any serious animadversions on his waking dreams. "In the first place," observes the writer of the article on Generation, in Rees's Cyclopedia, "what is an eternal mould or model? Its existence is purely ideal. But if we should grant this, there are still insuperable difficulties remaining. Many children are unlike both parents, and they sometimes have parts of which both the father and mother were destitute, and with which therefore neither parent could have supplied them. This is the case with the offspring of mutilated individuals, and particularly with the male children of fathers who had lost one testis; a case which was not uncommon when castration was an ordinary mode of treating ruptures. The mother cannot bestow on her daughter a hymen after having sustained the loss of her own; nor can we see the source from which the foramen ovale, the ductus arteriosus and ductus venosus, the umbilical vessels, the placenta, etc., of the fœtus could be derived. The teeth, too, must puzzle us greatly. The various transformations incident to the lower order of animals are alto-

gether irreconcilable with the hypothesis. The adult frog has no bronchi, which are yet seen in its tadpole. In the bee kind, the males, females, and working bees, differ in structure. The offspring might indeed resemble the father or mother; but whence can be derived the moulded particles for the production of the working bees, which resemble neither parent, and which have no generative organs? How entirely does the caterpillar differ in all points of its organization from the butterfly! How on the principles of the doctrine can the particles unite when the male and female are so entirely different, as in the case of many insects where one is winged and the other not? Again, the supposition of the successive fixation of parts round the generative organs would seem almost absolutely inadmissible, for the reason that these very parts cannot be recognised until a comparatively late period of development, and after others have been some time formed."

A remarkable theory on this subject which, although now nearly obsolete, once occupied a considerable place among the speculations of physiologists, was that which ascribed the formation of the fœtus to a formative power of the mind, a sort of physical soul, the anima structrix, a vis plastica, a variety or modification of the VIS ESSENTIALIS. The partisans of this theory rely much on the effects said to be produced on the body of the fœtus, by causes operating on the mind of the mother. They allege, that the structure of the offspring is often materially changed and impaired by the longings and other diverse affections of the mother; that these effects are produced not from any corporeal cause, but from the action of the mind on the anima structrix of the fœtus; that there is a harmony between the mind of the mother and her body, and between the bodies of the mother and the child. Numerous attempts have accordingly been made to explain the manner and nature of this influence and this supposed sympathy; but it would have been better to have established the fact incontrovertibly in the first instance. The records of medicine abound with examples of almost all imaginable effects on the fœtus from the operation of the above supposed causes. Our faith in them must, however, be not a little staggered when we observe that there are endless examples of mental disturbances of the most intense kind, which occur at all periods of gestation, particularly in delicate and hysterical women, without being followed by any unnatural appearance in the child, even when the mother shall have expressed a strong persuasion that her child would be mutilated. Women cannot, in point of fact, FORETELL the appearance of the marks called nævi materni on the body of the child. Deformed and monstrous children, as well as children marked with nævi, have repeatedly been seen by the most judicious and accurate observers, when the mother had not been conscious of any cause which could in any degree be attributed to affections of the mind. Children are born blind, of healthy parents, without the circumstance being considered extraordinary, or any thing of an accidental nature being required to account for it. From various turns which superstitious and whimsical fancies take in different countries, the same appearances are ascribed to very dif-

ferent causes. In weighing the testimonies of authors, we shall find that the more experienced and judicious have indulged in the common notions about nævi much less frequently than others. In the numerous collections of monstrosities and other extraordinary productions of all kinds that are collected in museums, there are to be met with no genuine examples of nævi according to the common notions, as those of varieties of fruit, sausages, frogs, mice, pigs' feet, rotten potatoes, stumps of amputated extremities, solutions of continuity from the observance of wounds and accidents, as affecting the offspring of the human female; while on the other hand it might be easy to instance numerous examples of monsters IN VEGETABLE productions, which of course we could not ascribe to any power of the imagination, nor to any mental affection whatever.

If, then, the phenomena of nævi can afford no proof of the existence of a plastic soul; if we suppose that the beautiful structure of an animal body cannot be reared by chance, nor by a fortuitous concurrence of atoms, nor by any blind force with which inorganic particles may attract each other; it remains for us to consider, whether the fœtus is or is not formed before the time of conception, according to the hypothesis of EVOLUTION. This opinion has been principally maintained in modern times. According to this hypothesis, the Creator, with whom nothing is difficult, forms the machine. He must be supposed to have arranged unorganized matter in conformity with his previous design, and according to the archetype fixed by his wisdom, before the accession of the influence furnished by the male. In the same way we find in plants, a perfect flower, capsules, and well-formed seeds, differing from fruitful seeds only in the circumstance that they would not grow so as to produce a new plant. The metamorphoses of insects have been adduced in support of this notion of evolution. The rudiments of the trachea which are to contain air in the bee, exist in the fatty substance of the worm from which the perfect insect is formed. The phenomena of incubation until the entire animal is completed are cited in support of the same hypothesis. After recounting the gradual and progressive unfolding of the body of the chicken, Haller observes, that "the progress is nearly the same in quadrupeds." In the human fœtus, which at first seems a mere unorganized mass, Lieuwenhoeck already discerned, by means of his microscopes, a distinct organization. It is thus clear that an animal without limbs, or a discernible arrangement of parts, is gradually changed, by various stages, into a perfect being, nourished by food, and susceptible of voluntary motion. "Epigenesis," in accordance to the principles of this theory, "is altogether impossible. Whoever has contemplated the structure of the body with attention must be convinced that, an animal could not exist without a heart; since the principles of life and motion live in that organ. But the heart must be furnished with arteries to carry the vital fluid to all parts of the body, and such parts of the body with veins to convey it back again to the heart. It is easily proved that the fœtus does not consist of a mere skeleton of blood-vessels. Viscera must be sustained by vascular tissues, of which some cel-

lular membrane, they may be said principally to consist. But no one has seen the actual composition of the viscera effected by successive deposits of particles. They are perfect, although small, as soon as they can be perceived to exist. Muscles must have been present from the first; for the young animal in the incubated egg is capable of motion, and from its straight state is able to incurvate its body. It is, moreover, irritable, and must also on that account have muscles, although they are concealed under the appearance of a mere gelatine. The head is large at a very early period, and the eyes are visible among the first parts to be seen, together with the heart. The muscles require the presence of nerves, and brain must have been present in the fabric of the embryo, together with the head and the heart."

Such is the theory of animal propagation by EVOLUTION; and it obviously leads to the conclusion that the perfect animal must exist previously to conception, and that nothing is then, in strictness of language, generated: but that the several parts, which were previously folded up and contracted into a small space, are at that time expanded, unfolded, enlarged, and rendered conspicuous. Under this mode of explication, we must admit, it would seem, that the germs of all the human race, as well those who have already lived as those who hereafter may be born, were contained in the ovaries of the first created woman; a proposition of so strange a nature, and so completely unsusceptible of proof, that we cannot value very highly the hypothesis which renders it necessary.

The pre-organized germ of this hypothesis, we are left to infer, would remain for ever torpid in its ovarian receptacle, were it not stimulated by the semen masculinum. That influence is presumed to rouse it out of its lethargy, and to cause its growth and development. The stimulating properties of the male influence, it is asserted by Haller, excite the motion of the heart; and that granted, "the subsequent development of the new being," he adds, "might be easily understood." See the analysis of Haller's theory in the article already referred to in Rees's Cyclopædia.

The great reputation of Haller has not, however, gained universal assent to his opinions on this subject. The accurate and well-informed Blumenbach, of Göttingen, has refuted the hypothesis of evolution with great effect; and has arrayed against it a number of objections, which its advocates will not find it very easy to withstand. His opinions on the function of reproduction are, upon the whole, the most rational which have hitherto been promulgated. The following statement of his doctrine was drawn up by the writer of the article already quoted, from the Author's original Manual of Natural Philosophy, and his Institutes of Physiology.

The hypothesis of evolution has been employed, especially in modern times, to explain the origin of organized bodies. It has been stated, that no man nor any other animal, and that no plant, is really generated; but that they have all existed in their parents in a state of antecedent but completely formed germs, since the first creation. Their various generations have been formed,

the one within the other, like a series of pill-boxes, and have only been gradually unfolded and brought to light by fecundation, in their respective turns. Haller, who was the leader of the evolutionists, roundly asserted, "that the viscera, and all the bones of the future fœtus existed before conception in the maternal germ, but nearly in a fluid state," and therefore invisible. This opinion must be deemed on a first view of it, irreconcilable with sound philosophy, by reason of the supposition involved in it, of the useless creation of innumerable germs which are never to be evolved: and it is utterly at variance with all chaste and sound physiological induction, on account of the great aid which it requires from preternatural agency, and the useless complication of natural powers which it supposes, in opposition to all the laws of philosophical investigation. According to the unanimous representations of the most celebrated and zealous advocates of Evolution, the pre-organized germs lie already formed in the mother, are roused at the time of fecundation, and proceed to their development in consequence of the agency of the male seminal fluid. What we must understand by conception is, therefore, nothing but the excitation of the torpid germ by its exposure to the influence of the male liquor. Here, then, in the first place, we have to suppose a merely exciting power of the father, as being the entire measure of his contribution. But children often resemble most strikingly their fathers only. Bitches, after copulating with different dogs, often bear puppies resembling their different fathers. Two individuals of different races, as a Negro and a European, produce together offspring of a middle character, as a mulatto: and where the species of animals or plants, are different, mongrels are produced having as many characters of the father's formation as of the mother's. All these facts cannot be overlooked; and in order to account for them, the evolutionists must suppose in the semen, in addition to its exciting influence, a formative power, which can change the pre-organized germ contained in the mother into something of the form of the father. Thus then we find two powers in the semen, an exciting and a formative one. But by means of an artificial hybrid impregnation, repeated through several generations, we can at last change one species of organized bodies entirely into another. One species of plant fecundated with the male dust of another, produced seeds from which hybrid fecundable plants were produced. These were again sprinkled with seminal dust from the same male plant, and after this process had been repeated four times, a complete metamorphosis had taken place, by which the characters of the male were substituted for those of the female plant. The same circumstances will occur in the human species, if the offspring of an European woman by a negro be fecundated by a negro, and the produce of that conception again by a negro, etc.: and thus, at last, the pre-formation of the maternal germ which has been preserved from the creation of the world avails nothing; but yields entirely to the formative power of the male fluid, which, according to the hypothesis of evolution, should merely excite it to action. We may affirm, in short, that of all the

phenomena adduced in support of this hypothesis, not one can be established sufficiently clearly to be admitted as a proof of it; while there are numerous unexceptional observations directly opposing it. But in proportion as this hypothesis of evolution is inconsistent with the ordininary phenomena of nature, and with the rules of philosophizing; so on the contrary, the opinion, not that any fictitious germs are evolved by means of conception, BUT THAT THE NEW BEING IS, IN FACT, GENERATED AND GRADUALLY AND SUCCESSIVELY FORMED FROM THE GENERATIVE FLUIDS, commends itself to our approbation by its simplicity and its accordance with the other processes of nature.

"Since this affair of a true generation by successive formation," observes Blumenbach, "has been variously explained by physiologists, I conceive that we shall approach most nearly to the truth, by adopting the following propositions. 1st. The materials of which organized bodies and consequently the human frame are composed, differ from all other matter in being regulated, simply and exclusively, by vital powers. 2nd. Of these, the most remarkable, and that of which the existence and agency can be the least questioned, is the force which acts on organized structure, when prepared for its destination, but not moulded into shape, and which bestows on it, according to its various natures, diverse and determined forms. In order to distinguish this vital power properly from all others, I give it the name of nisus formativus. 3rd. This formative energy is imparted to the materials of generation, when they are contained in a mature state, under the requisite conditions in the uterine cavity; builds up in it the rudiments of the embryo, and gradually forms its organs to correspond to their pre-ordained purposes: it preserves the same structure by the process of nutrition, as long as life continues; and it obviates the effects of casual mutilation as far as that can be accomplished by means of reproduction.

This gradual formation of new organized bodies can be most manifestly discerned in those which combine, with a considerable magnitude, a rapid growth; and such a kind of delicate semitransparent texture, that they can be clearly seen through; particularly in a sufficient light and with moderate magnifying powers. This is the case in the vegetable kingdom with some simple aquatic productions, as the conserva fontinalis, which is propagated in the early part of spring; in the bloodless division of the animal kingdom, as the hydra; and in some subjects of the animal kingdom with red blood, as in the incubated egg, on the first appearance of the chicken, and during its subsequent daily development.

It must here be observed, that the expression, nisus formativus, is employed simply for the purpose of distinguishing this from other kinds of vital powers, and by no means with any intention of explaining the cause of generation. I believe the latter to be concealed by a no less impenetrable darkness than that which involves the causes of gravitation and attraction, which are only names for effects, recognised like the nisus formativus, A POSTERIORI. I have employed the word nisus, chiefly in order to denote that the nature of this force is truly vital, and to distinguish it as clearly as possible from the merely

mechanical powers, by means of which some philosophers formerly endeavoured to explain the business of generation.

The very point on which the whole of this doctrine concerning the nisus formativus hinges, and which alone sufficienly distinguishes it from the vis plastica of the ancients, and the VIS ESSENTIALIS of Wolf, and from the principles of other hypotheses of the like nature, consists in the combination of the two principles by which the nature of organized bodies is explained; viz. the physico-mechanical and the teleological.

I hold it most probable that, in the first place, a definite time is required for the various fluids of each sex, which seem to be united in the cavity of the uterus, after a fruitful intercourse, to be more intimately admingled and brought into a state of mutual agency. When the period of this preparation is complete, the mature and intimately blended fluids become animated by the nisus formativus, by which the hitherto unformed materials of generation are partly moulded into the elegant coverings of the ovum, and partly into the figure of the contained embryo. Hence we can understand why the smallest vestige of a fœtus cannot be discerned, even with the assistance of the excellent modern dioptrical instruments which we now possess, during the first week after conception, excepting in the unformed fluids contained in the uterine cavity; while the embryo appears, as it were on a sudden, on the third week.

I should exceed the limits of these institutes, if I were to recount at greater length those arguments drawn from nature herself by which the influence of the nisus formativus in generation seems to me to be rendered very highly probable. On this principle, I explain the memorable experiments in the history of hybrid productions, where prolific hybrids fecundated during several generations, by the same seed of the same species, have produced an offspring gradually deviating from the original maternal form, and assuming the characters of the father, until at last the former has been completely changed into the latter by a kind of an apparently arbitrary metamorphosis.

The well-known fact of the great frequency of monstrous productions in some species of domesticated animals, particularly swine, and their rarity in the wild condition of the same animals, can only be explained on the principles already stated. The evolutionists are compelled to assert that all these monstrosities must have pre-existed in the primary germs from the first creation of things. The phenomena of reproduction taken altogether can be much more aptly explained by the agency of the nisus formativus, than on the notion of the pre-existent germs; and some particular examples, as for instance of nails growing on the middle joint of fingers and toes after the loss of the first phalanx, cannot well be solved on any other principle.

After considering and carefully weighing the arguments on both sides of the question, it appears obvious that even those who assume the pre-existence of germs, must allow the male seminal fluid a considerable formative influence in addition to the exciting power which they recognise in it; and consequently

the doctrine which they defend requires in fact the assistance of the nisus formativus; while the latter sufficiently explains the phenomena of generation without the aid of pre-existing germs."

Such are the principal theories which at different periods have been entertained on the subject of animal reproduction. They have severally been submitted to the reader at sufficient length to enable him pretty perfectly to comprehend them.

It is now time to proceed to consider the more obvious changes which the uterus undergoes in consequence of impregnation.

In that condition of the organ it is usually described as the GRAVID UTERUS.

Before impregnation can take place several things are necessary. Thus in the male, one or both of the testes should be in a healthy state, secreting semen. In the female in the same manner, it is necessary that the ovaries, at least one of them, shall be healthy and physically competent for their functional offices.

Besides the existence and actual soundness of one or both ovaries, there must be an increased determination of blood to them. In the human female this is periodical, in brutes it is only occasional. In both cases the subjects are more susceptible of impregnation at that period than at any other time. Applying this remark to the human female, we might be warranted in the general statement, that a woman should menstrate before impregnation can take place. But sometimes we hear of women being impregnated without ever having previously menstruated. This however does not prove in such cases the absence of an increased determination of blood to the uterus; although it does prove that there could not be a superfluous quantity of it to eliminate, in the usual form of a catamenial discharge. The œstrum in brutes is limited to a particular season. In the human subject the susceptibility to impregnation is confined to no season.

Again, before impregnation can take place, there must be an intercourse between the sexes, although in some brutes it can scarcely be said to amount to a coitus. In fish for example, at a certain season, the female, directed by her instinct, seeks the shallows of her element, and trailing along the gravel, deposits her ova. The male, directed also by a kindred impulse, seeks the same place and sheds his semen over the ova just spawned by the female, by which they become impregnated. See Whitaker's History of Craven, p. 179. Something analogous to this takes place in newts. Spallanzani observed two of these efts swimming round a pond in parallel lines. After some time they both stopped, and remained still for a little while. They then placed themselves at right angles with one another, having their heads together. Soon after this their tails approached each other, so that they formed an acute angle; at which time the water had an opacity given to it; which was attributed by Spallanzani to a deposit of female ova, and of male semen. The same function is liable to striking peculiarities in the frog, in birds, in some multiparous animals, as in the canine species, in the pig, and in many others.

The effect of the coitus on the male subject is a discharge of semen. Very different opinions are however entertained as to its ultimate destination. Harvey, who tried many experiments on animals with a view to the elucidation of these subjects, asserts, that he never found the fluid of the male in the uterus of the female. Haller found it in the uterus of a sheep in one case, and that was forty minutes after the coitus. De Graaff never once found it in the uterus. It has been believed by some that the semen masculinum is absolutely conveyed into the fallopian tubes; and those who are of this opinion quote Ruysch for their authority. He mentions the case of a woman who was taken in adultery by her husband, who instantly put her to death. Ruysch had the opportunity of examining the body, and found, as he supposed, semen masculinum, both in the uterus and in the fallopian tube. Other physiologists have greatly doubted the correctness of this report, inasmuch as Ruysch was much advanced in age at the date of the observation referred to; whilst moreover it is added, that his pupils and assistants, who were present, acknowledged that they were not able to see what he professed to describe.

On account of the difficulty of detecting the male semen in a visible or palpable form in the fallopian tubes, some physicians have refined the matter a little, and have discovered that it might not be absolutely necessary that the grosser semen itself should go into the tubes; and that it might be sufficient if something exhaled from it, which should pass into the tubes. To this supposed exhalation they gave the name of AURA SEMINALIS. It is well known, that in the case of the frog, the semen masculinum is actually applied to the ova out of the female body. It is therefore to be presumed, that the same thing must happen when the ovaries and their vesiculæ Graaffianæ are included within the body. It is however to the ovaries that we have to determine our attention for the first proofs of impregnation in the human female. There can be no doubt of impregnation, when we are able to discover an ovum presenting a particular appearance upon the surface, and visibly projecting from the plane, of the ovarium. The vesicles of De Graaff are indeed not ova, but the spaces or chambers where the ova are formed. We must therefore inquire, what changes are sustained in these prominences in consequence of the admission of the male to the female? One of them, a plurality in multiparous animals, becomes enlarged, projects upon the ovarian surface, and bursts. When it bursts, it discharges a something which is conveyed by the fallopian tubes into the uterus. There is then left of course, on the wounded part of the ovary, a cavity technically called a CALIX, which however is filled up by degrees, and which of course gets progressively smaller, until it entirely closes. The seat of this affection of the ovarian tissue presents the natural hue of a cicatrix, of a deepish yellow hue, and is therefore called CORPUS LUTEUM. When therefore we find one of these cicatrices, we consider that impregnation has taken place, whether we find a fœtus or not. The corpus luteum continues for some time, a twelvemonth or more, very evident. Another good reason for considering one

of these appearances an evidence of impregnation is, the fact of their number answering the number of ova actually furnished by them. We have said IN GENERAL, because there would appear to be some exceptions to the inference. If a woman shall have had one child, there will be one corpus luteum; if twins, there will be two; if triplets, there will be three, etc. The same thing takes place in multiparous animals. Those who pretend that this is but imperfect evidence, take advantage of the few exceptions. It has been said, that a corpus luteum has been found without a fœtus. Such may have been the fact, and should be considered a consequence of a miscarriage. If the party miscarrying should die soon after, one of the ovaries will present the appearance of a corpus luteum; and the uterus will possibly be found in a state of enlargement. But if the patient should live some time after this, and then die, in that case also the corpus luteum would be found; but no fœtus, nor any accessional proof of impregnation, would be discovered. Again, sometimes there have been twins with only one corpus luteum. This is explained by the rudiments of both ova being contained within the same vesicle. Sometimes there are two corpora lutea, and only one ovum. To this also there is a ready explanation. The woman may have miscarried of her second ovum. In this case we should of course expect two corpora lutea, but only one fœtus. There can therefore be no doubt that the presence of a corpus luteum is a proof that impregnation has taken place. From the best attention which the author has been able to give to the subject, it appears to him certain that this effect has been produced by the agency of the male semen, transmitted by an adequate power along the vagina and other genital tissues, in a manner analogous to a stream of electric fluid, so as to be ultimately conveyed to the ovaries. Any further explanation of such an agency must be quite as difficult to give, as it would seem difficult to comprehend the notion of a peculiar sympathy between different links of the chain of tissues interested in the intercourse between the sexes, as maintained by the late Dr. Haighton. It is a maxim in philosophy, that matter cannot act where it is not. A specific action, we know, does take place in the substance of the ovary, of which the effect has never been seen without an influence having been imparted to it by the male agent. It is therefore a strictly logical inference, that the influencing cause must have been present to produce it. No sooner do the changes in one of the ovaries as formerly described take place, than the whole of the uterine system is thrown into a state of activity and excitement. An increased determination of blood towards the womb and its appendages, has been ascertained to exist almost contemporaneously with the application of its exciting cause. The internal surface of the body of the uterus becomes suffused by a specific secretion, which in the sequel is to become an important agent in the formation of a connecting medium between the mother and the fœtus. A change also takes place about the neck of the womb. The mucous glands there situated, and throughout the passage through the cervix, increase in size, an abundant quantity of strongly adhesive mucus is secreted, to furnish a guard

against the escape of the ovum. Other actions, moreover, are speedily set up in the constitution, in the stomach, in the breasts, in the cellular tissue, etc., all in sympathy, no doubt, with the state of the uterine system. The primary effect of impregnation is to form an ovum. The appearance of an ovum, when first seen in the uterus, is that of a cloud of exquisitely delicate tissue. It would seem to be transparent and gelatinous; but upon exposing it to the contact of spirit of wine, or of diluted vegetable acid, it is immediately observed to present the character of something like organization. At a more advanced stage of development, it is ascertained to consist of two delicate membranes, the one within the other. Of these, the external is called the chorion, from its being every where covered with a coating of fine vascular tissue, projecting at right angles from every point of its surface; in consequence of which it has the appearance of a bundle of fine wool or hair: and hence its name of chorion. Within the chorion there is another membrane, still more delicate in its texture, called the amnion. The amnion is naturally perfectly transparent, and has no projecting flocculency from its external surface like the chorion. Within the interior membrane is to be found, when become cognizable to the eye, a minute worm-like body which is already in the course of being evolved into a fœtus. In this stage of its development it presents the appearance of a whitish thread or a small maggot coiled up; and cannot be distinguished from a brute embryo, excepting that the latter is somewhat longer in proportion to its thickness. The next visible stage of the progress is the budding of the extremities; and next to that the pullulating of the fingers and toes. The head may be distinguished from the rest of the body by an intermediate narrowness between it and the trunk. As it advances in its development, it comes to have something of a determined shape. After being completely formed, it continues to increase in size till the end of the ninth month. Every part having then arrived at a state of completeness and perfection sufficient to enable the whole to exist by its own power, nature expels it. When thus arrived at its full uterine growth, it presents a very different appearance from what it had exhibited at first, and is become possessed of attributes of which in its earlier embryo state it gave not the smallest indication of ever arriving at.

The entire ovum consists of several parts, viz. membranes, placenta, umbilical cord, the fœtus itself, and liquor amnii. The fœtus is connected by the navel string to the placenta, into the substance of which it enters, and usually at some little distance from its centre, but OCCASIONALLY NEAR ITS CIRCUMFERENCE. The author has more than once seen it terminate in several radiating branches on the membranes, at the distance of several inches from the placenta. The length of the umbilical cord differs in different cases. Its usual length at the full period of gestation is about two feet. It has been sometimes seen of the length of four feet and upwards. In other cases it has been short of six inches in length. There are inconveniences attaching to each of these extremes. When too long,

it is apt to slip down before the fœtus, upon the rupture of the membranes. In this way it may come in the way of being pressed between the child's head and the parietes of the pelvis. This may cause an obstruction in its circulation, and thus have the effect of destroying the child. When very short, if the child be drawn to a distance from the mother, it may cause inversion of the uterus. In that case, the placenta should be left low in the vagina, until it can be separated from the inverted surface of the uterus, and the latter carefully but effectually reduced. When a child is being propelled into the world, we cannot be very positive whether the cord might prove long or short: therefore it should always be considered proper practice, to keep its navel as near as possible to the external parts of the mother.

The umbilical cord in the human subject consists of three bloodvessels; viz. two arteries and one vein. The arteries are smaller in size, in comparison with the veins. These vessels are connected together by a particular kind of cellular substance, which usually contains more or less of a gelatinous viscid fluid. Dr. Hunter seems not to have believed that there was any cellular membrane in the cord; but it may be easily shown by inflation. Sometimes there is only one artery and one vein. In this case the artery is much larger than usual. When there are two, which is the usual complement, they communicate together very freely, especially when they begin to ramify into subordinate branches in the placenta. In brutes there are more of these vessels; viz. two arteries and two veins, besides some others. In them, the navel string is also shorter than in the human subject, and its vessels almost always run in a straight direction. The veins, if more than one, generally unite when they enter into the abdomen of the fœtus. In brutes there is a vessel which forms a communication between the bladder and the allantöis. This vessel transmits urine, and is called urachus. But brutes have another vessel, or rather, two more vessels; for there is one artery and one vein. The artery passes from the mesentery through the navel, to go to some parts which will be indicated hereafter. The vein runs parallel with the artery. Sometimes however the vein passes in spires over the arteries, which are less spiral. Sometimes there are little coils, as if the vessels were drawn up and formed into twists. This must of course lengthen the passage for the blood. We occasionally find a knot on the string, which in all probability, and in the greater number of cases, is formed at the time of labour. It may however happen at any other time in cases where there might be an excessive quantity of liquor amnii, as for example we find mentioned in Smellie's cases. Most frequently however this knotting takes place during labour; and it is very easy to conceive how it may happen. Let the cord be supposed to be lying in a coil round the orifice or neck of the womb; the head of the child having to pass in that direction, will find its way through it, and must necessarily draw it into a knot; the end of the string being fast at both extremities. The knot however does no mischief, as the gelatinous substance in the cellular

membrane prevents the effect of pressure upon it. The liquor amnii, in some degree, may also, by buoying up the fœtus, promote the same effect.

Neither absorbents nor nerves have been distinctly seen in the umbilical cord. Both these have been sought for diligently; because it was thought they might explain certain circumstances, difficult otherwise to be accounted for. But no traces of either have been found. Nerves have been wanted to explain the appearances on the child called nævi materni, by those who believe that impressions made on the mother are capable of producing effects of this kind on parts of her offspring. We convey the impulses of our feelings and will, to different parts of our bodies, by nerves; but if they happen to be divided or in a state of paralysis, i. e. if in point of efficiency they do not exist, we should will that part to do anything in vain. But it is clear that there is no communication between the mother and child.

The placenta is supposed to perform two principal functions. 1st. It is the medium for conveying nourishment to the fœtus in utero; and 2nd, it is the medium for the vitalization of its blood.

The placenta is a flat, roundish, or oblong substance, like a cake; and thence its designation. The fœtal membranes, together with this body, have sometimes been called secundines. The placenta is a very important organ in the business of utero-gestation; but it is not given to all animals. Those which are oviparous have no placentæ, including birds, and those animals that have the actions of birds. One instance of this structure is the bat.

The rule which nature observes in the number of placentæ apportioned to the human subject, is that of having furnished one placenta for each fœtus. But there are some exceptions; for when the rudiments of two fœtal subjects are inclosed within one and the same vesicle of De Graaff, there will be but one placental mass; although each will be supplied with separate vessels and a distinct circulation. But when there are two or three, or even four children; each child, if proceeding from a distinct vesicle, will have a distinct placenta. In cases where there are a plurality of placentæ, the vessels are all distinct, and have no communication with each other, at least not generally. In some cases, however, they do communicate very freely. This communication is effected by anastomosis. When the child is born, the navel-string is tied; and in general it is tied in two places. Of these ligatures, the first of course is intended to secure the child against bleeding to death. It is not always known what the other ligature is for, and indeed some practitioners only apply one. The second is however intended to prevent the SECOND child, in case of an anastomosis of its placental vessels with those of the first, from bleeding to death. There is a great variety in the forms of the placentæ of different animals.

We have seen that in the human subject the after-birth is flat and round, or oblong. In the guinea-pig it is round but not flat. In some animals it is annular, surrounding the fœtus like a bracelet; as in the canine and feline species.

Fig. 1.

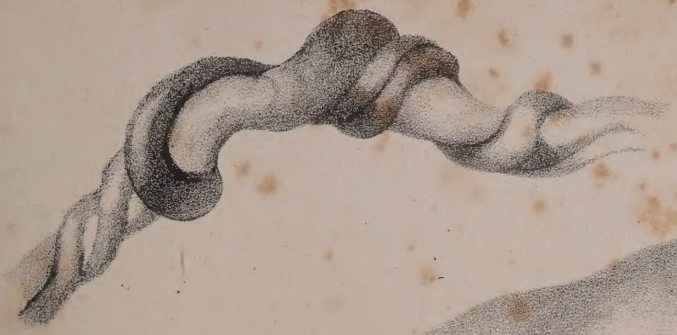

Fig. 2.

Fig. 3.

Fig. 5.

Fig. 4.

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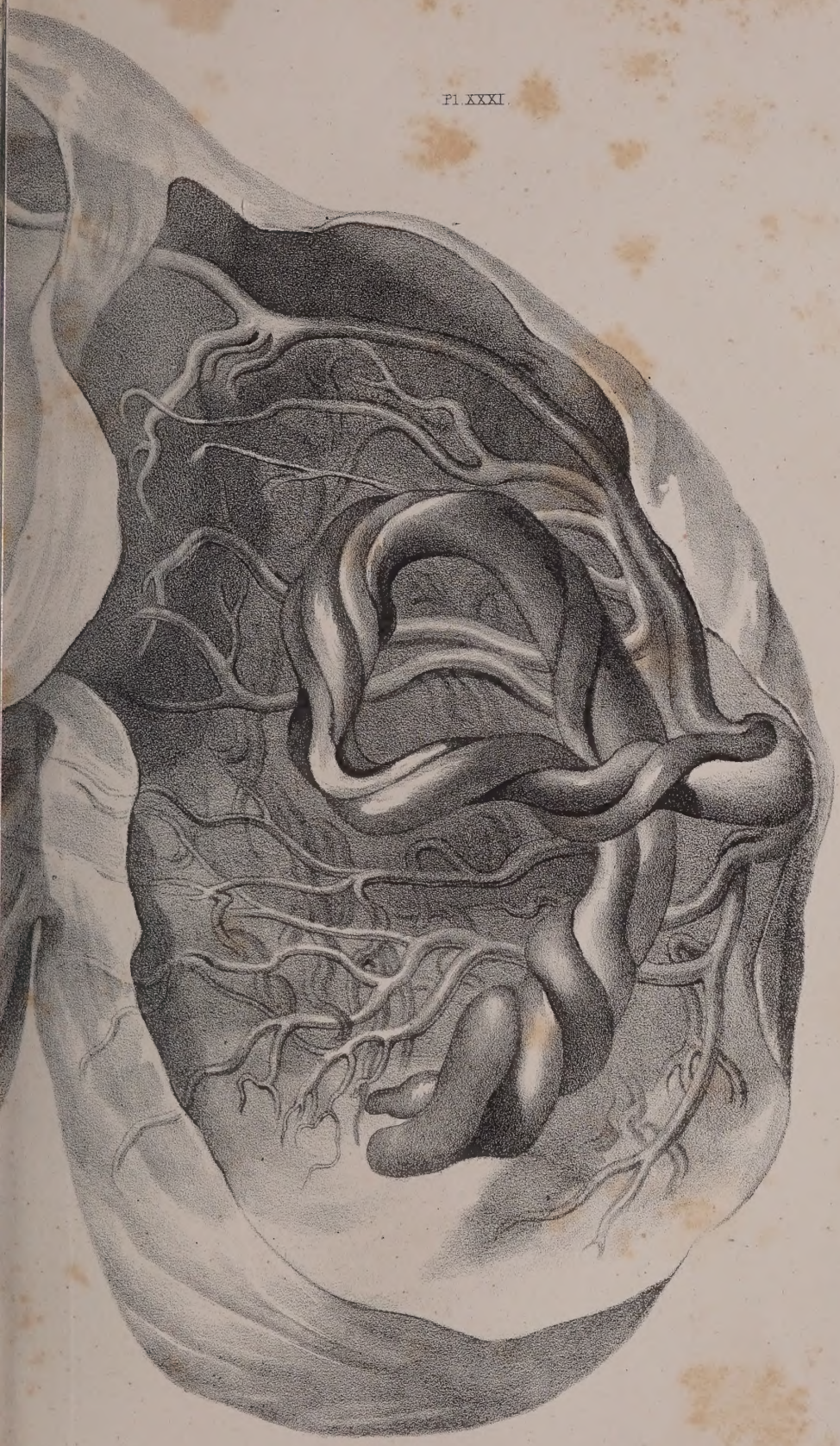
Pl. XXXI.



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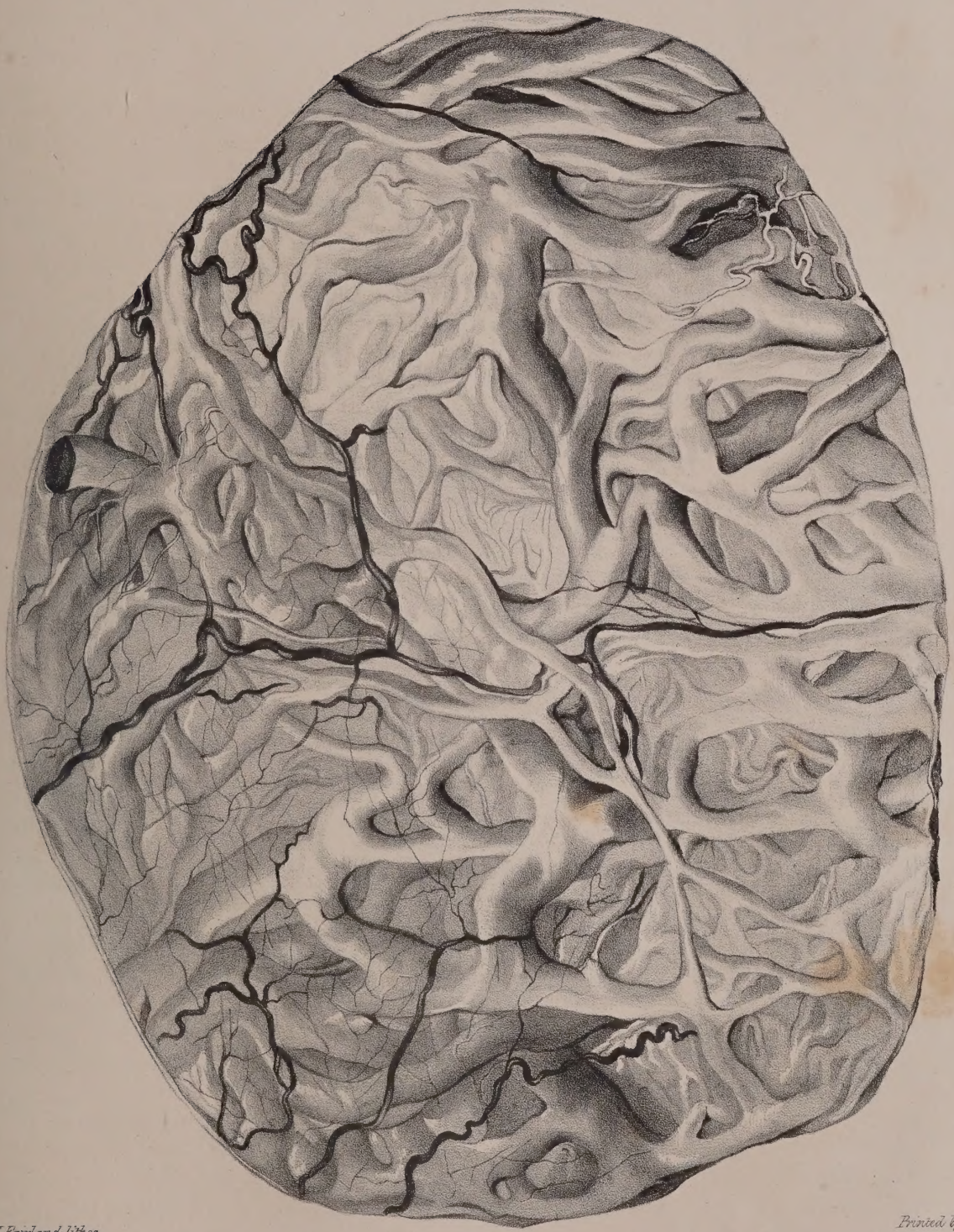

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In ruminating animals there are a number of placentæ of a comparatively small size.

The thickness of the placenta in the human subject is about an inch or an inch and a half at its thickest parts; but towards its circumference it is thinner, forming a kind of raised and rounded boundary. It is said that in some animals this uterine organ is so thin, that they have been said to have no placenta at all. This is especially the case in the mare and in the sow.

The placenta does not always adhere to the same part of the uterus: in general it connects itself to the superior part of the womb, and it is well that such is the ordinary locality of its attachment; inasmuch as there is great danger arising from its being attached to the neck and orifice of that organ; of which abundant proof will be submitted to the reader hereafter.

When we examine the placenta after its removal from the uterus, we can readily trace its different parts. It has two surfaces, an external and an internal. Its external surface is that which may be observed to have been in attachment to the uterus. This surface is convex, rough, and irregular, with the appearance of fissures or breaks in it. Some persons have thought, that on account of this disposition of its tissue, it might possess a degree of power of accommodation to different circumstances; so that upon a sudden exercise of the body it might be able to suit itself to the motions of the uterus without being detached. The internal surface is concave and smooth, being lined by the fœtal membranes, which, when reflected, form the external covering of the umbilical cord. It is at this surface the vessels of the cord enter the placenta, where their radiated distribution may be observed with great distinctness. The veins are external to the arteries.

The next inquiry which we have to make concerning this body regards its structure. On this subject there have been several opinions. Haller describes it as being fibrous, spongy, and parenchymatous, loaded with blood. If we macerate it in water, and separate it part from part with a probe, it will indeed appear to resolve itself into something like fibres. But these are vessels, as may be easily seen by throwing in injection into them by the navel-string. From this obvious connexion with the navel-string which one portion of the placenta is thus proved to have, this portion of it is therefore called the fœtal part of the placenta. But the structure and characters of the placenta are subject to considerable varieties in different animals. In some, the fœtal part only of the placenta comes away at parturition. In the human subject both parts come away. It is not unnatural to inquire the reason for the retention of the maternal part of the placenta of the cow, for example, and of other ruminating animals. In these animals, after impregnation, nature forms a number of processes from the internal surface of the womb. These act as the maternal part of the placenta; but being part of the substance of the uterus, they cannot come away at parturition. After a time, however, they become gradually less and less projecting, until at last there is no trace of them left. On the surface of these

projections there are a number of foramina, and these are connected with the fœtal part of the placenta by bundles of fœtal vessels being admitted into the cells of the cotyledons. In some animals, as in the cat, both parts of the placenta come away, and each part may be easily distinguished from the other. The maternal part, after a successful injection of it, assumes a granular appearance, because of its being composed of cells, and of the injection being arrested in those cells, for want of a direct communication between them and the fœtal vessels. The maternal cells in these subjects are very minute; of which, indeed, their granular appearance is of course a necessary consequence. If again we inject from the fœtus, as for instance from that of the cow, no connexion will appear between the maternal and fœtal portions. We have precisely the same result in the human subject, only in the latter case, the maternal and the fœtal portions are intermixed in a different and more complicated manner. After a successful injection of the maternal part, it assumes the appearance of an uniform mass of injected substance. But upon afterwards examining it very minutely, we may discover intermediate portions of a fibrous or vascular structure not at all coloured with the injecting material. If we have for our object to inject both portions of the placenta, we must then introduce our injection both by the fœtal vessels of the umbilical cord, and by the uterine arteries of the mother. It hence follows, if the facts now propounded be correctly stated, which the author verily believes they are, that during the connexion subsisting between the mother and the child, throughout the whole period of uterine gestation, THERE MUST BE TWO DISTINCT CIRCULATIONS. Of these, one is very simple, the other is more complicated, especially if it be traced through the body of the fœtus, which it supplies with blood.

The circulation between the uterus and the maternal part of the placenta is very simple. It is the same as in every other part of the body, excepting that here there are cells between the extremities of the arteries and the beginnings of the veins. In tracing the distribution of blood through the fœtal circulation, there are circumstances which are remarkable, and they require our best attention. There is first, a striking peculiarity about the fœtal heart; there being a passage of communication between its two auricles through the foramen ovale, and another communication between the aorta and pulmonary artery, which is called the canalis arteriosus.

These facts being premised, the reader will be able perhaps more readily to follow up a description of the fœtal circulation. We have had occasion to speak of the umbilical cord, as consisting of two arteries and one vein, included within a membranous covering. These vessels, both arteries and veins, are called umbilical, from their originating and terminating at the navel. On reaching the placenta, they ramify minutely from its centre towards its circumference, enter deeply into its substance, and form nearly the whole of the fœtal portion of that body. They there terminate in corresponding veins, which unite to form the umbilical vein. This goes up the navel-string, of which it forms a part, into

the abdomen; and then proceeds in the direction of the liver to the vena portæ, where it divides into two. One branch, called the ductus venosus, goes direct into the vena cava. The other goes forward into the vena portæ, and circulates its blood through the liver, whence it is returned by the hepatic veins into the vena cava; one in a direct course, the other more circuitously. From the inferior cava, the blood goes into the right auricle of the heart. Part of this goes through the foramen ovale to the left auricle. The rest, which is the larger proportion, goes into the right ventricle, to be forwarded into the pulmonary artery. A portion of the blood so received by the pulmonary artery goes to be distributed through the lungs; but the principal part of it goes through the ductus arteriosus into the aorta, which conveys it through all parts of the body, and also by its umbilical branches, to the placenta. Hence it would appear that there are here two circulations going on; viz. one between the mother and the maternal part of the placental circulation, and the other between the fœtus and its portion of the placenta. But we have said nothing of a communication between the mother and the fœtus; for unquestionably there must be a communication of this kind, although some persons, because they have not detected it, have ventured to assert that it does not exist, and that the fœtal circulation can be of no use to the fœtus in the way of nourishment; the fœtus, according to their notions, having to derive its nourishment from the liquor amnii. It should, however, be remembered, that the liquor amnii is a merely aqueous fluid, having minute quantities of several salts in solution in it, but containing no coagulable lymph, and therefore not competent to afford any nourishment to the fœtus. But suppose it were of a nutritive quality, how is it to be conveyed into the mouth of the fœtus? Sometimes the fœtus has no mouth, at other times we meet examples of acephalous monstrosities, without any aperture whatever by which nutriment could find its way into the stomach; and even some of these abortive productions have been seen without a stomach, and but few inches of intestine; with the other chylopoietic viscera, the kidneys, liver, spleen, or pancreas, very imperfectly formed; sometimes without a chest, and consequently without either heart or lungs: and yet such specimens of monstrosity have possessed the vital faculty of fœtal growth as completely as perfectly formed children. That there must be a communication of some kind or other subsisting between the circulations of the mother and child during the uterine life of the latter there cannot therefore be a doubt. Who ever doubts the existence of a communication between the absorbents and the cellular membrane? The lymphatics are known to arise by open mouths from the intestines; but we cannot, by injecting the valvulæ conniventes, convey injection into these absorbents; and so may be the case, or rather, one would presume, must be the case, with the absorbent ramules of the venous portion of the fœtal circulation in the placenta. Of these ramules some, it would seem probable, take their origin from the extremities of the arteries; whilst others, with still more probability, begin with open orifices from the cells of the maternal

part of the placenta. They absorb something from these cells which in the placentulæ of the cow is visibly like chyle, and which they must be supposed to convey to the rest of the blood; but what this something is has not yet been determined. Some are of opinion that it may be a peculiar modification of coagulable lymph. Then comes the question of how the red particles are formed. The answer must be, that the fœtus must form them itself; and this hypothesis is not difficult to comprehend. In oviparous animals the egg has no red blood before incubation; and during the period of incubation all that the mother does for the egg is to impart heat to it, and that can be done artificially as effectually as by the animal itself. Here, then, the ovum, which is all that proceeds from the mother, only furnishes parts so specially endowed, as gradually, in the course of their development, to become possessed of a sanguinifying power, and therefore to become competent to manufacture red particles. The cotyledons of the cow are visibly glandular, and their cells contain from about half an ounce to an ounce of a white fluid like chyle. The veins of the fœtal part of the placenta absorb this into the mass of fœtal blood, and by the sanguinifying power incident to the vital actions of the organs of the calf, it is made into red blood. Hence the inference, that the communication required is affected by means of bibilous veins on the part of the fœtus, and of cellular cavities charged with the subject matter of nutriment on the part of the mother.

But the placenta produces an effect on the blood which bears an analogy to that produced by the organs of respiration in the adult. It is not, however, here intended to be asserted that there is the same action performed in the placenta in this respect as in the lungs. The action of the latter may be considered as necessary to support animal heat, or at least to contribute to promote that effect; the medium we are in being of a lower temperature than that of our bodies, and therefore having a constant tendency to cool us; whereas the temperature of the fœtus and its medium are the same, therefore this part of the process is not required. The fœtus, however, does require a placental circulation as a means of vitalization of its blood, or of such constant renewal of its chemical properties as we know to be produced in the adult by respiration. This fact is perfectly well known; for let the umbilical cord sustain, during a difficult labour, a sufficient amount of pressure to interrupt the circulation in it but for a few minutes, and the child will inevitably be still-born. This cannot be for want of nourishment, for children when born vigorous and healthy require nothing to be given them to nourish them for several hours.

Having described the structure and the economy of the placenta, the order of the subject leads us to consider the membranous bag which contains it, together with the fœtus and the liquor amnii. This investiture is composed of several membranes, lying one within the other. The rule of nature in this respect is to allot to each fœtus a distinct bag. When the mouth of the womb dilates during labour, the bag protrudes, and either breaks of itself, or is ruptured by the prac-

titioner. In either case the child makes its way through the ruptured membranes; and if there be another child, it will be usually found contained within another bag of membranes, which will be found protruding after the first shall have been removed. But there are exceptions to the rule of each fœtus having a distinct bag; and, indeed, this exception occurs so often, that some persons have had repeated opportunities of meeting with cases in which both fœtal subjects were contained in the same bag. Some, indeed, have asserted that they had met with this disposition of things more frequently than the contrary. It is obviously an advantage for each fœtus to have a distinct bag; for if both be within the same bag, and that by any accident should be ruptured prematurely, both children would be destroyed.

As to the comparative anatomy of the fœtal membranes, we have scarcely time to bestow upon that subject. With respect to those which are proper to the female of our own species, they differ greatly in their characters at different periods of pregnancy. As they are most perfect and most developed at advanced periods of gestation, we shall begin our inquiry concerning them as they appear during the latter months. Let us then suppose that we have a gravid uterus far advanced. We inject it and make an incision into it, and remove a square portion of it, which shall include the entire thickness of its walling, and no more. By this we expose a peculiar tissue incorrectly denominated a membrane, called the spongy chorion or decidua. This is somewhat rough and irregular, although not harsh to the feel; but really having more the appearance of sponge than of any thing else with which it could be compared. If we again make an incision through this, corresponding with the section already made in the uterus, we bring into view another layer of structure of a more obviously membranous character, very thin and delicate as to its substance, and beautifully transparent; indeed so transparent that the fœtus may be seen shadowed distinctly through it. This is the proper or true chorion. The reason of this name, more appropriate to it at an early period of gestation, has been already stated. Within the true chorion is the amnion, also a diaphanous membrane, including the child and the fluid which receives its name from it, and gives a floating buoyant support to the fœtus during its uterine gestation. Such is the relation of the membranes with respect to each other. But as the placenta forms a part of the ovum, we should also distinctly know its situation relatively to the membranes. Be it then understood, that it is situated immediately behind, that is, exteriorly to the true chorion. Where it comes to the edge of the placenta, the spongy chorion appears to be distributed into two laminæ, of which one passes between the chorion, that is, the true chorion, and the placenta, and the other between the placenta and the uterus. The chorion, where it passes over the placenta, is connected with the internal layer of the decidua, and gives it, by means of that connexion, a minutely foraminated appearance, presenting a resemblance, as it has been supposed, to a webbing of Brussels lace. Its irregularity sometimes puts on a granular

appearance. It is very vascular, and receives its vessels from the uterus. It is the only membrane, if indeed it were correct so to consider it, which does receive its vessels from the uterus. Hence by some it has been called the maternal membrane; but another reason for that designation given to it is the fact that it is originally secreted and fabricated by that organ itself. Its foraminated appearance results from the membranes being separated from the uterus. The vessels remaining with the uterus, these apertures in the decidua become a necessary consequence. Although this is the thickest membrane, so to call for the sake of convenience, it is also the weakest. It is easily torn, and has therefore been sometimes called tunica lacerabilis. As it is the external membrane of the ovum, it has no doubt a principal share in forming the connexion between the mother and the fœtus. It was Dr. Hunter's opinion, that the discharge of any part of it at any period of pregnancy was a sure sign of miscarriage. The author in like manner has never met with an instance of this kind when any part of the decidua came away of which the event did not fully confirm the statement of Dr. Hunter. But it requires the use of some caution not to mistake other membranous substances for portions of the decidua; for such substances are sometimes morbidly formed by the uterus in cases of dysmenorrhea.

The chorion is a strictly membranous body, and therefore, although much thinner, is very much tougher and stronger than the decidua.

The amnion is, the most attenuated membrane of all; but nevertheless capable of sustaining a greater weight, or offering more resistance, than both the others put together.

These, then, are the three membranes which we find investing the fœtus during gestation.

But there are some membranes in brutes which are not to be met with in the human subject, as the allantöis, which is of a peculiar shape. It contains a fluid possessing urinous properties; and we can trace a communication between it and the bladder by means of a canal or vessel which is called urachus. At the last month of gestation in a cow, this is so large as to contain a gallon of fluid; and during the earlier months its size is in proportion to the rest of the ovum. It is extremely thin, like gold-beaters' skin, and is situated between the chorion and the amnion. It has been a matter of inquiry whether something of this kind cannot be traced in the human subject. If it could be supposed to be very minute, it might possibly have been overlooked; but when we consider the size of it in brutes, and presuming that it should bear a similar proportion to the whole of the ovum in the human subject as it does in brutes, it must have been easily seen had any such thing existed. Some good anatomists, as Albinus and Dr. William Hunter, have indeed positively asserted that they had seen an allantöis in the human subject. We must give them credit for having seen something; but unless it had been seen to communicate with the bladder, it might as well have been called anything else as an allantöis. In cases of mis-

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

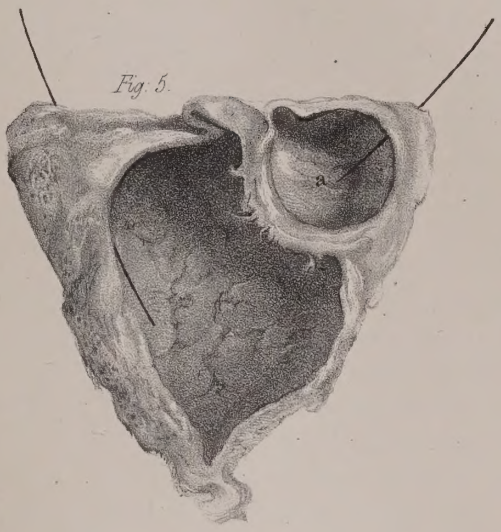

Fig. 6.

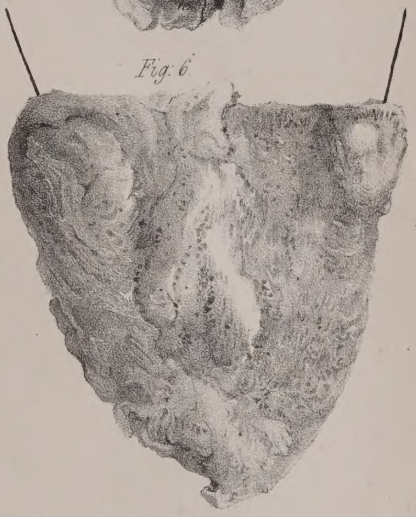

Fig. 7.

Fig. 8.

W. Fairland lithog.

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carriage in the human subject, there is indeed often found a small vesicular body, containing a white fluid, attached to the navel string. Sometimes it is suspended by a filament from the amnion; and a question may be raised as to the identity or analogy of this vesicle in the human subject with the allantöis of the brute. In some cases the filament just mentioned has been traced through the navel-string to the mesentery; but for that very reason it furnishes no direct analogy to the allantöis. There is, however, another membrane in the brute to which this would seem to bear some analogy. It is the tunica quarta of some authors. It is very vascular; and from its red vessels it has indeed been called tunica erythröides. It is situated between the fœtus and the amnion. Its vessels come from the mesentery through the navel. Of these there are two, namely, one artery and one vein; and are called omphalo-mesenteric vessels. Now the filament by which the vesicle already mentioned is suspended from the amnion in the human subject, is found to consist of these two vessels: and therefore there is some analogy between this vesicle and the erythroidea; but none between it and the allantöis.

To understand easily some matters that are to follow, it should here seem necessary to add a few remarks on some of the peculiarities of the membranes as they present themselves to us at an early period of pregnancy: we will suppose any time between the second and third months. On having a gravid uterus of this period to examine, we remove a small section of its parietes as in the former case. The incision having been made entirely through, but not in any degree beyond, the walling of the uterus, we should encounter a peculiar kind of tissue of a softish spongy consistence, approaching as much to a fleshy as to a membranous substance. This we should find to be a part of the decidua. But this tunic would be found to contain something. On making an opening through it, we should find another membrane, which, upon being examined, would prove to be a continuation of the former one, in the same sense as that portion of the pericardium which goes close over the heart is a continuation of the loose pericardium. Therefore that part of the spongy chorion which we find immediately lining the uterus, is the decidua vera or decidua uteri; and what we see after cutting through this, is the decidua reflexa. After cutting through both layers of the decidua, we arrive at the true chorion, and within it the amnion. Thus at an early period of pregnancy we make out four membranes; the decidua being of course divided into two; as then it would appear to consist very distinctly of two layers.

It will perhaps appear convenient hereafter, that the reader should have been made acquainted with the following description of the decidua by Dr. William Hunter:—"In a few weeks' growth, the membrana decidua is more distinct for examination than in the more advanced periods of pregnancy, and is different in several circumstances. It is a very soft, tender, and pulpy membrane, which lines the whole cavity of the upper part of the uterus, reaching to the beginning of the cervix, and passing a little way

within the origin of the fallopian tubes, at which places it is perforated by small openings. In a case of very early conception, probably not more than two weeks, which was examined by Mr. Hunter, the decidua was found, upon opening the uterus, as fine at the beginning of the cervix as the retina, but without any hole in it there. This perhaps always takes place in a very early conception, where the ovum remains undisturbed in the uterus: but where it passes off in a miscarriage, the decidua at the cervix is perforated. In more advanced pregnancy, that part of the decidua which lines the inner surface of the uterus seems to loose itself at the beginning of the cervix, and has evidently there an opening. The decidua which covers the external surface of the chorion becomes gradually thinner as pregnancy advances, but has no opening in it at the cervix uteri, nor any where else. The decidua is very irregular in its thickness; some parts being thicker than a crown piece, and others of extreme thinness: but this is subject to a good deal of variety in different persons. In the more advanced periods of gestation, there is however less variety in the thickness of the different parts of the decidua; but it is then altogether a thinner and much more uniform membrane. "Besides that portion of the decidua," observes the learned editor of Dr. W. Hunter on the gravid uterus, "lining the cavity of the fundus uteri, and which Dr. Hunter, by way of distinction, used to call the decidua vera, another portion forms an external covering to that part of the chorion which is not in contact with the inner surface of the placenta. THIS WAS DISCOVERED BY DR. HUNTER, who called it the decidua reflexa. It is a membrane of considerable thickness, and is sometimes of a yellower colour than the decidua vera. The ovum lies between a part of the decidua vera and the decidua reflexa, both of which unite into one membrane at the edge of the placenta: or, in other words, the decidua vera divides itself at the edge of the placenta into two laminæ, one of which passes between the placenta and the inner surface of the uterus, and the other forms the decidua reflexa, which covers the outer surface of the chorion. The decidua enveloping the ovum does not, however, merely cover the shaggy vessels of the chorion at their outward floating extremities, but also the whole of their external surface, even to the depth of the chorion itself. The chorion commonly appears transparent, and not covered by any layer of decidua immediately applied to it.

Where the decidua reflexa is beginning to pass over the chorion, there is at an early period of pregnancy an angle formed between it and the decidua which lines the uterus; and here the decidua is often extremely thin, and perforated with small openings so as to look like a piece of lace. In proportion as pregnancy advances, the decidua reflexa becomes gradually thinner and thinner, so that at the fourth month, it forms an extremely fine layer, covering the chorion. It comes at the same time more closely in contact with the decidua which lines that part of the uterus to which the placenta is not fixed, till at length they adhere together. One might naturally be led to suppose that this part of the

decidua, after its junction with the decidua reflexa, should become a thicker membrane than it was originally. This, however, is so far from being the case that it is really thinner. The decidua reflexa being very thin before it is joined to it, can produce little additional thickness, and the decidua which lines the uterus, is gradually made thinner by the progress of pregnancy by distention. How the decidua envelops the ovum has never yet been observed, and therefore can only be a subject of conjecture. The most probable supposition is, that the ovum passes from the ovarium into the cavity of the uterus, while the coagulable lymph is pouring out by the arteries of the uterus, which is afterwards changed into decidua. One could hardly imagine that the ovum should make its way into the middle of a membrane which is already formed, and though tender, yet capable of some degree of resistance. In two examinations, however, which I have known to have been made with care at a very early period of pregnancy, where the decidua was already formed, no ovum could be discovered. But this circumstance I consider as invalidating very little the probability of the supposition which has just been made; because it is natural to think that at a very early stage of pregnancy the ovum is so small as to be detected with great difficulty. Although it be extremely probable that the decidua begins to be formed at the same time that the ovum is passing into the cavity of the uterus, yet it is not absolutely necessary for the formation of the decidua that the ovum should previously have arrived at that cavity. When an ovum grows in the ovarium, or the fallopian tube, the decidua is formed in the uterus, and the uterus is considerably enlarged, so as to undergo to a certain degree changes exactly similar to those which take place in natural pregnancy.

We have already spoken of the structure and economy of the placenta, and we have here only to offer a few additional remarks on the subject of its formation. In the first month of pregnancy there is no placenta: nature, however, accomplishes the process of nutrition by means precisely similar in their effect and operation, although presenting a different external appearance. In the first and second month the chorion is very plentifully supplied with processes of a flocculent tissue, which are proved to be vessels having the power of taking up fluids, and of conveying them to the interior of the ovum for its nourishment. When pregnancy has further advanced, this vascular flocculency gradually disappears from the general surface of the chorion, and accumulates on that part of it which is to become the locality of the placenta, corresponding to which the navel-string is inserted: and this is nature's mode of beginning to form the fœtal part of the placenta. The maternal part is formed from the tunica decidua, which in time is wrought into that cellular substance which appears afterwards. The reader will thus perceive that the author still adheres to the doctrine which assumes something of a cellular character for the maternal part of the placenta, as propounded by the late Dr. William Hunter. A systematic work can scarcely be considered a proper vehicle for the discussion even of

PLAUSIBLE assumptions of errors, both as to matters of fact and induction; errors perhaps rather presumed, than sufficiently proved to have been committed by that eminent physiologist.

The membranes contain a watery fluid, which does not materially differ from the fluids which are ordinarily effused into the other cavities of the body by the exhalants. It contains, however, very little coagulable lymph, and therefore does not coagulate upon the application of heat. It contains small quantities of salts, like other effused animal fluids; but water is its principal constituent. Small as the vessels of the exhalants are, they are nevertheless capable of exhaling this fluid in proper quantity.

It has indeed been advanced as an opinion, that liquor amnii is formed by the fœtus. This notion, however, cannot be true; for at an early period of gestation it exceeds the fœtus in weight in the proportion of fifty to one. The quantity of it at the full period of gestation differs very materially in different cases; the quantities, even in healthy subjects, varying between two ounces and two pounds. Dropsy of the amnion will be noticed hereafter as a disease of the ovum, and in such cases it may amount to many gallons. Its average quantity is between half a pound and a pound. The quantity of liquor amnii therefore increases absolutely and not relatively from the commencement to the latter period of gestation.

This fluid is employed as an auxiliary power in the mechanism of parturition. When acted upon by the contractions of the uterus during labour, it occasions a protrusion of the membranes in the form of a bag; so that it is made use of by nature as a wedge to dilate the mouth of the womb. This bag is very tense when the womb contracts; and afterwards becomes flaccid upon the contraction ceasing, and tense again during the next pain. When the orifice of the uterus is sufficiently dilated, this membranous bag is ruptured; or if not, it may be proper for the practitioner to rupture it. During the process of dilatation of the vagina, the head of the child acts also as a wedge to effect the same object; but it cannot readily pass until the membranes shall have been ruptured.

The liquor amnii is especially useful, at the earlier periods of gestation, in giving security to the fœtus against the effects of pressure from any untoward action of the uterus, or of any violent approaches of other bodies. We may illustrate this point by supposing a fragile substance suspended in a bladder of water. We might push it and toss it about as much as we pleased, as long as it continued floating in the fluid medium; but let the water out, and we should see that such usage would soon destroy it. If we might suppose then such an issue to be a certain result of such an experiment, then would it follow, that were the bag of membranes to be ruptured at an early period of gestation, the fœtus ought in like manner to be destroyed, and bear such marks upon it as would indicate the manner in which it had been destroyed. This accordingly we find to be the case. If the bag of membranes is broken in the

third or fourth month of gestation, the fœtus will often be found to have been pressed quite flat. As the pregnancy advances, the fœtus increases in strength, and does not require so much of this defence. Nature is thus careful to provide the most suitable means to answer her ends; for when the gestation is not much advanced, the water bears a very great proportion to the bulk of the fœtus: but between the third and the fourth month the bulk of each is about equal. After that period the bulk of the fœtus gradually increases over that of the water, till the end of the ninth month. At the full period, the fœtus will be observed on an average to bear to the liquor amnii the proportion of about nine or ten to one; for at this advanced period it is not so essentially and in so great a degree useful, as it had been during the early months; and is reserved, in a quantity much reduced, to act as a mechanical agent to assist in the time of labour. When rupture of the bag takes place, its contents may perhaps be in some degree useful in lubricating the parts.

Of the Changes sustained by the Uterus itself in consequence of Impregnation.—These are, indeed, very remarkable; and affect its shape or figure, and some other of its properties. With regard to its size, we observed, when speaking of the unimpregnated uterus, that it was about three inches in length, two in breadth, at the broadest part, and about one in thickness, including both its anterior and posterior parietes; that its shape was that of a wine flask inverted, and slightly flattened; and that by making a section into its interior, in the direction of its long axis, we might ascertain its internal cavity to be of a very moderate size and triangular in its form. After impregnation, something passes into this cavity from the fallopian tubes. To make room for the reception of what is destined to be thus transmitted into it, a mutual recession of the opposite surfaces takes place, so as to enlarge the cavity and to render the external appearance more convex. After this, it undergoes another change: the sides become roundish. As it enlarges, it must of course increase in weight; and women about this time are often heard to complain of a sense of weight and of a bearing down in the vagina: so that the vagina is said to be shortened. But this effect is owing to the vaginal portion of the womb projecting further into it, so as to produce a degree of prolapsion, or rather of descent of that organ. About the third month this bearing down is often so great as to cause considerable inconvenience. But as the womb increases in size, it gradually rises towards the brim of the pelvis, and this sense of bearing down is removed.

During the progress of utero-gestation the womb is gradually distended: but this distention is unequal, as it affects different portions of it. During the first five months the distention or development is confined to the body; and the neck does not alter; a fact however which does not exactly accord with the

description of Dr. Smellie on the same subject. After this time the NECK begins to be developed. As the body enlarges, it acquires a roundish form. From the fifth month the neck gradually shortens, the upper part of it being imperceptibly added to the cavity of the body; and it goes on shortening till the end of the ninth month, when it forms together with the body one capacious oviform cavity, sufficiently ample to contain the ovum at the ultimate fulness of its growth. As the neck of the womb does not begin to stretch till the fifth month, it follows that the whole of its distention is accomplished during the four last months of gestation. We might naturally suppose that a quarter of it yielded in each of the four months: but this development does not appear to be in a direct proportion to the time occupied by it. At the sixth month inclusive, it is shortened a little: at the seventh, somewhat more than one half of it is developed and added to the cavity of the body: so that it shortens somewhat more between the fifth and seventh than between the seventh and ninth months. During the eighth month the distention goes on, so as to leave undeveloped little more than the mere orifice of the womb at the commencement of the ninth month of gestation. This order of dilatation is obviously wisely adapted to its object: for if the neck dilated as soon as the body, there would be left but little check on abortion.

But another fact to be taken into the account, as being further explanatory of the several stages of development first of the body and then of the neck of the womb, is an actual difference of character of the body from that of the neck. In the first months the several tissues of the body relax and give way; and continue so to do to an advanced period of the fifth month; when those of the upper part of the neck begin to yield and give way; and are followed, in a consecutive order of development, by those of the lower tracts of the neck. But still those forming the lowest boundary of the cervix, viz., those more immediately bordering on the orifice of the womb, remain more or less rigid till the full period of gestation is completed. But on the accession of labour these also become relaxed, and sometimes suddenly; as in the course of a few hours. At this period of consummation of the pregnancy, however, those of the body no longer relax; but assume the very contrary condition, namely, that of resistance and contraction. This contracting state of the womb, together with that of other muscles co-operating with it, occasion the pain of labour.

It sometimes happens, that the uterus does not stretch in this natural order: for every now and then we hear of its bursting. The accident of rupture of the womb has however taken place in many cases in consequence of mismanagement of the labour, and at other times from actual violence used by the practitioner. Such cases will of course present themselves for consideration under a future head of subject. It is intended here simply to notice the fact of spontaneous rupture of the uterus in consequence probably of an originally UNEQUAL development of different parts of the parietes

of that organ. Cases of this kind will be recorded in their proper place. It is sometimes unusually thin, being occasionally very thin all over: but at other times it has been observed to be exceedingly thin only at particular parts.

The womb owes its development to the agency probably of no principle purely mechanical. There can be no question at least of its being in a great measure indebted for that attribute to an accession of new substance. In other words it grows. It follows however from what has been already stated, that this growth is sometimes very unequal. It therefore becomes liable to the accident of spontaneous rupture.

Besides the change that takes place in the neck of the womb from gradual diminution of length, there is moreover a functional alteration which supervenes during pregnancy in the state of its muciparous glands. A secretion is set up. In the unimpregnated state of the organ, we can see some small follicles here pretty numerously interspersed, from which some mucus may be pressed. After impregnation, these glands enlarge and secrete much more mucus; and the entire neck of the uterus becomes filled up with it. When pregnancy is more advanced, they are so large as to admit the end of a probe, and, in fact, they go on enlarging till the end of the ninth month: and at the time of labour they are large enough to admit the end of a goose quill. There is an astonishing quantity of mucus secreted by these glands; but on examining the apparatus furnished for the purpose it will be found quite equal to the effect. The discharge of this mucosity in abundant quantity, is very desirable at the time of labour; inasmuch as it is accompanied by a state of relaxation of all the parts concerned; whereas the absence or a deficient quantity of it is usually considered a sign of rigidity.

As pregnancy advances, the uterus rises higher in the abdomen, and nature observes a pretty regular gradation in this respect. At the third month it rises just so high in the pelvis, that in a female of spare habit its fundus may be felt above its brim. At the fifth month the fundus may be distinctly recognised halfway between the brim of the pelvis and the navel. At the sixth month it is found a little below the navel. At the end of the seventh month it is often an inch and a half or two inches above the navel; and at the end of the eighth, it is half way between the navel and the scrobiculus cordis; and in persons of short stature, much more than halfway between the navel and the pit of the stomach: etc. etc.

This gradual ascent of the uterus in the abdominal cavity during pregnancy is productive of different effects. It must obviously have the effect of pushing other parts out of their proper places, and so produce some considerable encroachments. It must also have the effect of causing much inconvenient pressure to be made upon some important bloodvessels, absorbents, and nerves. If a woman has a reducible hernia, it may indeed draw it out of the sac and reduce it; and such a result has often happened: but if irreducible, it might bring on

symptoms of strangulation. The gravid uterus has, at other times, operated as a CAUSE of hernia; for as it rises in the abdomen, it increases in width, as well as length, and becomes of course increasingly a cause of distention and of attenuation of all the abdominal parietes. The author has often known hernia produced in this way in subjects who had previously no predisposition to it. Of herniæ produced in this way, that called the umbilical is the most frequent; whereas also that is the variety of rupture which is most frequently reduced by gestation. On finding themselves the subjects of what would seem to them spontaneous reduction of it, patients might think themselves cured, which however would prove to be a great mistake: for the cure would depend on an obliteration of the mouth of the sac, as must be evident to every person who understands the anatomy of the parts implicated; and an obliteration of this kind not being actually the case in the temporary reduction here supposed, the hernial protrusions return as soon as their subjects get up after their confinement.

On examining a gravid uterus at the latter months, we find its shape to be oviform and not pyriform, which we have stated its figure to be in its unimpregnated state. We indeed observe great varieties in this respect, depending no doubt on corresponding varieties of causes. If for example there might happen to be only a small quantity of liquor amnii in the bag of membranes, some parts of the child forcing more than other parts, would have the effect of causing the uterus to yield, and to be produced more at one part and in one direction than at another part or in another direction. Add to this the effect of different positions of the child, and of the relative positions of a plurality of children. In the latter case, it is very manifest that the form of the uterus will not a little depend upon the position and packing of the several children. If we suppose one to be situated above the other, the uterus would of course ascend very high; but in other respects it would approach to the form of a gravid uterus in common cases: but if placed side by side, the womb would present a great breadth, and perhaps be found more or less depressed in the middle.

In our general examination of the gravid uterus, we have an opportunity afforded us of observing the course and other properties of its bloodvessels. The arteries will be easily distinguished by their serpentine courses and convolutions. They are also smaller than the veins, whereas the latter are comparatively straight in their direction. The arteries, be it recollected, take in like manner the same convoluted course in the unimpregnated state of the uterus: so that a person who never saw the distribution of them in the gravid uterus might think that their serpentine course in the unimpregnated state, might be an arrangement made on purpose to admit of their being extended so as to escape being put dangerously on the stretch by pregnancy. Inasmuch, however, as they are distributed precisely in the same manner during gravidity as they are in the unimpregnated state of the uterus, it is clear that nature designed them for the same purpose in both conditions of the organ; which probably was that

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of retarding the velocity of the blood's motion: hence we do not find this course taken by the veins; the velocity in them being naturally, from the operation of other causes, inconsiderable.

When we again view the uterus externally, we may easily see the absorbents. In the unimpregnated state of the organ these are not very distinct; but at the latter period of pregnancy they are indeed very large and numerous, both in the human subject and in other animals. These absorbents of course carry their contents to the thoracic duct.

Another property of the uterus during gestation to be remarked upon, is its absolute and comparative thickness. These are difficult points to determine. They can only be ascertained by injection, and by repeatedly examining the uterus under different circumstances, and also under similar circumstances in different subjects. Many are of opinion that the uterus is of the same thickness during gravidity as it is in its unimpregnated state. But the fact is, that it really is, in some cases, and especially in some parts, much thicker during gestation than it is uniformly in its unimpregnated condition; but that in other cases, and in particular parts, it has been seen much thinner; even indeed so thin as to admit of the limbs of the child being shadowed through its parietes. This latter fact is here stated on the averment of the late Doctor John Sims, who declared to the author that he had himself once met with a remarkable instance of it. If a woman were to die in the last month of her pregnancy without any flooding and without any discharge of the liquor amnii, the uterus would probably be found as thick as when not impregnated. But if she had died from flooding, the waters not having been discharged, the vessels in the mean time having been much depleted, or, as we might suppose, in some such cases, almost entirely emptied, the uterine parietes might be expected to appear much thinner. If again we suppose the waters to have escaped without any flooding, and the uterus to have firmly contracted after the birth of the child, the mother having been suddenly attacked and speedily carried off by a paroxysm of convulsion; in such a case we should doubtless find the uterus strongly contracted, and its parietes unusually thick. Such is usually the state of the uterus after a safe and prosperous delivery; and this in point of fact is the state of it, on account of which women are often induced to complain of a bearing down of the womb after delivery, and also of being annoyed with the presence of a hard substance occupying one side of the abdomen; which is nothing more than the uterus in a firmly contracted state. As women are apt to be a good deal frightened at this circumstance, and especially during their first confinement, it should be explained to them. After the lapse of a very few days, the tumour will entirely cease to be felt. Women under the same circumstances, and subject likewise perhaps to the inconvenience of having an unusually large pelvis, complain of a bearing down, accompanied by a painful state of the genital passage, to which they give the description of feeling as if they were coming to pieces, or as if their bowels were coming out. In these cases the patient should be in-

structed to keep in a horizontal posture; otherwise prolapsion and even procidentia of the womb might be the consequence.

When we examine the gravid uterus in respect to its constituent tissue, we find that it has fibres in different directions. This fibrousness of tissue it is true cannot be seen in the unimpregnated uterus. But now, we can see, in some parts of the organ, that peculiarity of their character as distinctly as we can see the fibres of muscles in other parts of the body. The author is aware that some few persons, both in this country and abroad, seem to have made up their minds, that certain fibres which the majority of modern physiologists consider to be muscular, ARE REALLY NOT muscles. Not to mention the name of any existing practitioner, it may be stated that the late Mr. Else was of this opinion. There was good reason, however, for taxing that gentleman with a little prejudice in the matter. A small portion of the uterus at an advanced period of pregnancy was taken to Mr. Else for his opinion of the precise nature of the tissue which was so submitted to him. After carefully examining it, he gave for answer, that his opinion decidedly was, that it was muscular; but being detached from its natural locality, he could not say to what part of the body it belonged. But when he was told that it really was a piece of the uterus, he examined it again, and THEN said that it could not be muscle, for there were no muscular fibres in the uterus.

The course of the uterine muscular fibres EXTERNALLY is exceedingly irregular, and they are so endlessly intermixed in their distribution, as to make it impossible to pursue and unravel them. But internally their course is better defined. Some pass longitudinally over the fundus of the uterus to shorten it; others pass in circles around its body to reduce it in circumference; and it is probable that by the spasmodic contraction of some of these latter fibres, that what has been called the hour-glass contraction is produced. There are, indeed, two points or places of the gravid uterus, upon exposure of the internal surface of its body and fundus, where may be distinctly seen large belts of concentric muscular fibres; viz. round the entrance into each fallopian tube. They were first observed by Ruysch, and were by him called musculi orbiculares uteri; and others have since paid him the compliment of adding his name to that designation. In consequence of this distribution of its fibres, the uterus can act in all directions, but most powerfully in the direction in which it expels the fœtus. This strong action is also employed by it to throw off the placenta, and to propel it out of its cavity. When that is accomplished, the uterus is considered as having done its part completely. But it does still more. It lessens the orifices of the vessels which had passed from the uterus into the placenta. If it were not for the exertion of this power, flooding would come on, and the patient would speedily lose her life. The contraction of the uterus is so great at this time, that the orifices of its vessels are scarcely to be seen. They look like so many threads hanging pendulous from the uterine surface. The uterine vessels themselves may also in some degree exert the same power

of contraction, and thus contribute as an auxiliary means towards the prevention of hemorrhage; so much blood only being allowed to escape as goes to furnish what women call the cleansings.

Of the Signs and Indications of Pregnancy.—We have already enumerated the principal structural changes consequent upon conception: but inasmuch as many of the changes in question cannot be made available in the living subject as proofs of the fact, it is necessary we should have recourse to other signs not liable to that objection. There are, indeed, several symptoms by which the fact of impregnation having taken place may generally be ascertained with considerable certainty.

Among the first of such symptoms, in the order both of time and importance, is the suspension of the function of menstruation; which moreover frequently engages the earliest attention of the party or parties most interested in the result. But without reference to other circumstances, this solely cannot be received as an unfailing evidence of pregnancy. It is indeed a fact not to be refuted, that genuine menstruation cannot coexist with pregnancy; the menstruating organ being then entirely and exclusively occupied with business appertaining to another function. In other words, it cannot then secrete menstrual fluid, because of its being already engaged in secreting the decidua, which becomes in the sequel a closely adherent lining to the whole of its cavity, and therefore must subsequently itself prove an impediment to the uterus being employed again as a menstruating organ until the gestation shall be completed. Amenorrhea, it should however be recollected, is so far an uncertain proof of pregnancy in an absolute sense, as it is an accompaniment of many diseases and of functionally diseased states; as colds, habitual irregularities of the catamenial function, chlorosis, fevers, etc.; in short, of all causes whatever of disturbances of the general health.

Women, it is well known, are subject to considerable varieties as to the manner and character of this function. There are some whose constitutions are so very regular as to the appearance of the menses, as to be able to predict the day of their anticipated change. If therefore a married woman of this description finds so regular a function suspended, she will very naturally suppose herself pregnant. On the other hand, some women are exceedingly irregular in their menstruation. In some females, two or three months, or even more, the author has indeed known a longer period than a twelvemonth, elapse, without any appearance of the menstrual discharge, and without any manifest injury to the health being sustained. When, again, women marry about or after forty, they become liable to suppression or a dodging of the catamenia in the common course of things. In such cases we might be disposed to entertain some doubt as to the cause of the suppression, to seek confirmation from other indications, and to wait for the result of further developments. It should be observed, moreover, that women sometimes incur very inconsi-

derable losses of blood, which they are apt to look upon as menstrual, even during the first two or three months of pregnancy. These appearances the medical attendant should know are comparatively of brief duration, continuing for example only for a few hours, and are the consequence solely of rupture of a few straggling ramules of bloodvessels scarcely connected with the decidual membrane of the ovum, but distributed upon the vaginal portion of the uterus, and upon the upper portions of the vagina itself, and luxuriating in more than ordinary fulness of supply, in consequence of the increased determination of blood to the uterine system, and therefore more than ordinarily liable to accidental ruptures. The intervals between these appearances are for the most part uncertain or irregular; and in the greater number of cases they only occur ONCE after conception. With respect to any manifestations of this kind which may take place after the first two or three months, they will be found to arise from a separation of a part of the decidua from the surface of the uterus, and are in general precursors of miscarriages.

2. OF SICKNESS AND VOMITING.—It is well known that the stomach sympathizes strongly in many cases with the earlier developments of pregnancy. Few women therefore, incipiently pregnant, escape becoming the subjects of the peculiar nausea and sickness incident to that period. It generally comes on immediately upon getting up in the morning, and as it would seem in consequence of changing the horizontal position for that of either sitting or standing. This symptom alone cannot be considered as decisive of the existence of pregnancy; inasmuch as it may be produced by many other causes; as for example, by disordered states of the stomach itself, as well as by inflammations and other morbid conditions of diverse and distant organs of the body. But if attended by suppressed catamenia, and in circumstances of liability to impregnation, and of freedom from ambiguous causes of disqualification for that function, a woman could scarcely attribute her regularly returning morning sickness to any other cause so probable as to her being pregnant. This sickness continues in general for the first two or three months of gestation, and then gradually, but sometimes suddenly and unexpectedly, ceases.

3. OF LOSS OF APPETITE.—The sickness incident to the earlier weeks and months of gestation, is not unnaturally accompanied by a derangement of the power of digestion, and by loss and depravation of the appetite. Under these circumstances the stomach has sometimes sought relief from the effects of crudities thus generated in it, by unusual cravings for absorbents, strong condiments, unwholesome fruits, and various substances often or generally at other times considered inedible. This symptom is rather to be considered as an evidence of a state of stomach, than necessarily an effect, of one given condition of the uterus.

4. OF LOSS OF FLESH.—This symptom is not necessarily a consequence of a loss or perversion of the appetite, although frequently preceded by a dyspeptic state of the stomach. It is an indication of considerable value, as an evidence of recent

impregnation. Persons accustomed to attend to the changes observable in the external appearance of the countenance, in common with other parts, in consequence of impregnation, can predicate often with remarkable certainty as to the fact of the presumed cause, and even at a very early date subsequently to the commencement of its influence. The condition of the uterine system produced by conception, would seem to have the power of exciting the absorbent system to a prodigious activity. For it is not only the features of the countenance that are hollowed out and acuminated, so as to produce the peculiarity of expression just remarked upon; but all the external parts of the body are reduced in bulk and fleshiness, in consequence of the absorption of their subcutaneous adeps. So constant and universally influential on all external parts of the body is this accessional activity of the lymphatic system, as an early effect of conception, that French writers seldom fail to place in their list of earliest signs of pregnancy, that of FLATNESS OF THE ABDOMEN. Taking however into consideration, that reduction of flesh is an accompaniment and a consequence of innumerable other changes in the state of the living body besides those of pregnancy, it is obvious that this indication must be liable to much uncertainty, and that to make it available as a safe test of the fact of pregnancy, might require more extensive opportunities of comparing it with other symptoms, and of nicely balancing various puzzling circumstances inseparable from the nature of such cases, than the medical attendant might find he could easily or frequently command.

5. OF ENLARGEMENT OF THE MAMMÆ.—In this development we can pretty obviously see the design of nature. It is accordingly a sign or indication of pregnancy much more to be trusted, than some others which we find enumerated. But sometimes the breast enlarges from an increase of flesh, and not from accessional plenitude of the glandular part which enters into its composition. Therefore this indication should be preceded by some of the other symptoms, to make it of positive value as an evidence of gravidity. It is an undeniable fact that certain morbid affections of the uterus, foreign from and almost incompatible with pregnancy, have been occasionally, although confessedly not very frequently, accompanied by a secretion of milk-like fluid by the breasts. An imperfect secretion of milk may therefore be set up in these organs, and still pregnancy may not have been the exciting cause. There is indeed reason to believe that a secretion of milk may be artificially set up by suction without pregnancy; for it is well known that a bitch, by being sucked for some time, may be made to give milk, although she may not have had pups for months or years before. Some females of our own species have possessed the power of secreting milk for many years after they had ceased to bear children.

6. OF CHANGE OF COLOUR AND SIZE OF THE AREOLA ROUND THE NIPPLE. —There is always more or less of disk round the nipple; and the deeper tinge of its complexion is to be sought for in an accession of colour in the rete muco-

sum of the part. Now, there is always more or less of an areola in females of every age, and even in men: but it often becomes much darker during pregnancy than at other times. Some people therefore lay much stress upon it as an indication of pregnancy; and it may be the best single evidence which we possess. In some cases it may go a very great way to assist our diagnosis, inasmuch as in those cases especially the accession of colour is peculiarly striking. In a small proportion of women it may afford little or no assistance; as in females of very fair complexion, in some of whom no perceptible change of colour takes place either during pregnancy or even during the puerperal state: whereas in other subjects, the areola has presented a deepish tinge in the absence of pregnancy, and even in persons who had not been pregnant at any former period. Again, in another class of women the areola never acquires any considerable colour till after their first confinement. It may be observed, that in general, during the first pregnancy, the areola acquires a duskyish red hue. Nursing has always the effect of keeping up the appearance of it; and if a woman becomes pregnant again before the child is weaned, it is likely to be rendered darker during that pregnancy than it was before. Its increment of colour during lactation is not however to be much trusted to as an evidence of a coexisting pregnancy.

7. Of Quickening as a Sign of Pregnancy.—The term quickening, as used to express a certain stage of progress in the developments of gestation, has an obvious reference to an exploded doctrine once maintained in the schools, that the fœtus in utero became first possessed of the living principle, or was united to its physical soul, when the mother became first the subject of certain peculiar changes and sensations, which together constitute the phenomena of quickening. It is now well known that the fœtus in utero possesses some of the most important attributes of life from the earliest pulsations of the first speck of organization called the punctum saliens. It is a doctrine of the church of Rome that the ovum, in the event of its premature expulsion, becomes a proper subject of the rite of baptism as early as the fortieth day after conception. But the phenomena of quickening have in fact little or nothing to do with the period of the child's vitality, or at least much less to do with that question than with its subsequent developments. Even to a very late period, quickening has been considered as the earliest cognizance on the part of the mother of the child's movements in utero. Dr. Denman, in his Introduction to the Practice of Midwifery, gives his opinion of it in the following brief proposition. "By the term quickening," he observes, "is understood the first sensation which the mother has of the motion of the child which she has conceived." It was the late Dr. Seguin Jackson who first satisfactorily explained the cause of quickening. After examining the opinions of the most approved writers and teachers of midwifery of his time on the subject, we find the following announcement of his very ingenious theory:—"I must reject however the received opinion that the specific sensation experienced by the mother under the term quickening, is

to be ascribed to the first perceptible motion of the fœtus, when that fœtus is vaguely said to become animated: because—1. The sensation of quickening is not constant and universal: some women never experiencing it, and others with some of their children only. I do not speak of those first obscure but gradually increasing motions of the child, felt by every pregnant woman, and with numerous repetitions during gestation; but of that singular and specific sensation felt but once in the same pregnancy, always disordering the woman for a time, often occasioning her to faint, and which has been pointed out as marking the period when the embryo receives the principle of animation under the term quickening. 2nd. It has a distinct character from any subsequent motion of the child: no woman ever admits that it resembles in the slightest degree the struggles of the fœtus. 3rd. This sensation is never repeated in the same pregnancy; which should really happen, if it arose from the struggles of the child. 4th. It is totally incomprehensible that any motion of which the child might be supposed capable in the fourth month, should communicate such a sensation to the mother as to produce deliquium animi. On these grounds it is quite impossible for me to believe the doctrine which with gross want of precision ascribes the phenomena of quickening to some sudden imparting of life to the fœtus, or to its trifling and obscure motions when first perceived by the mother: I believe the phenomena, observed without prejudice, will bear me out in the assertion, that it does not arise from the fœtus, but from the uterus, and belongs not to the child but to the mother. It is a known fact that the uterus in the early period of pregnancy descends into the pelvis, and there remains usually till the latter part of the fourth month; and that as it enlarges it necessarily rises above the pelvis into the abdomen. There are indeed three circumstances or facts worthy of notice connected with this change of local position of the uterus. 1st. The ascent of the impregnated uterus from its position in the pelvis to its subsequent station in the abdominal cavity is sometimes gradual and unobserved; THEN THE SENSATION OF QUICKENING IS NOT FELT. 2nd. The uterus is sometimes so impacted in the pelvic cavity as not to reach its final station within the abdomen, without the assistance of art: then occurs retroverted uterus, during which quickening is never felt. 3rd. At other times, and those frequent although not constant, there exists some slight impediment to the ascent of the uterus, ON WHICH BEING OVERCOME, IT RISES AT ONCE INTO THE ABDOMINAL CAVITY, constituting what has so long been referred to the fœtus under the term quickening. The sudden intrusion of the volume of the uterus among the abdominal viscera, organs of high sensibility, accompanied by as sudden a removal of pressure from the iliac vessels, is quite equal to the production of the sensation called quickening. No woman quickens, I am compelled to use this strange term, improper when referred to the fœtus, and absurd certainly when applied to the mother, while the uterus remains in the pelvis, nor when it HAS ACTUALLY ARISEN above the brim of that bony cavity, and is settled in its place in the abdomen; BUT THE SENSATION IS FELT IN THE TRANSIT AT THE MOMENT WHEN THE UTERUS,

UPON QUITTING ITS RESIDENCE IN THE PELVIS, ENTERS THE ABDOMINAL CAVITY. This doctrine admits of verification or rejection by experiment and observation. If those who are extensively employed in the practice of midwifery will watch the sensation of quickening as it occurs simultaneously with the change of locality in the uterus, they will find how near it is to a demonstration." Medical and Physical Journal, vol. xxvii. p. 441. Lond. 1812. Since the above date little new has appeared on the subject in this country. But in America Dr. S. Jackson's doctrine has met with an earnest opponent in Dr. Dewees. In the author's opinion, however, the latter gentleman has made no points nor gained any triumphs. Dr. Dewees's Compendious System, p. 119.

8. OF THE MOTIONS OF THE CHILD IN UTERO AS AN EVIDENCE OF PREGNANCY.—The actual movements of a child in the womb are of course an evidence of the fact of its being there. But women have sometimes had sensations which they have referred to the actions of a child in utero, but which in fact have been occasioned by other causes, as for example by flatulent movements of the intestines, which have been really known to give something of similar sensations even to men. The first movements of the child are often so weak as to make the cause of the sensation produced by them, when uncombined with other proofs of pregnancy, very uncertain. But as pregnancy advances, they become gradually stronger, and eventually so much so as to become a source in many instances of much annoyance and distress to the patient. Sometimes the motions of a child in utero are very obscure in their effect on the mother, so as to induce her frequently to doubt her former impressions, and to fear that she must be the subject of disease, instead perhaps of a wished-for pregnancy. In such cases it will be of use for the practitioner to lay his hand, rendered cold by immersion in a cold medium, upon the abdomen; and by making considerable pressure upon the uterus he will often put himself in a situation to feel the child move very distinctly. But sometimes it may not move although it be present. Therefore a want of motion does not absolutely prove a want of child.

9. OF ENLARGEMENT OF THE ABDOMEN AS A SIGN OF GRAVIDITY.—This enlargement begins at the hypogastrium, whence it very gradually ascends. The French usually describe the lower part of the abdomen as flatter during the first month of gestation than at any other time. When the menses disappear suddenly, and a great enlargement supervenes quickly, the probability therefore would be, that the latter was the effect of other causes. On the other hand, when the enlargement is from disease, as from dropsy, enlarged ovary, etc., we might expect symptoms to accompany such enlargement differing in character from those of pregnancy, such as difficulty of breathing, scarcity of urine, absence of milk in the breasts, the enlargement embracing the entire breadth of the abdomen. A softer feel than usual, and perhaps a more or less distinct fluctuation of fluid within the abdomen, being occasional circumstances founded on the state of the general health of the subject; an enlargement of the abdomen might possibly result from an increased size of the uterus, although such an enlargement might

not be an effect of pregnancy. In doubtful subjects of this kind we have therefore to distinguish true and fœtal pregnancy, from all sorts of false pregnancies, as they have been popularly called; the effects of distention of the same organ, from other causes of enlargement; such as lodgements of morbid fluids in the uterine cavity, its mouth and neck being made up by disease; true conceptions become blighted in their progress; offensive and half-organized residua of effused blood commonly called molæ, and other tumours whether adherent to the parietes of the uterus, or loose and unconnected within its cavity; and lastly, the retention of the catamenial fluid, in consequence of a morbid occlusion of the orifice of the womb, or of some part of the vaginal passage. The diagnosis between the characteristic developments of true pregnancy, and those of the diseased enlargements of the abdomen just enumerated, will mainly depend for its accuracy on the precision of the practitioner's knowledge of the symptoms incident to diverse forms of abdominal developments in the female, and his skilfulness of taxis and manual management in the detection of obscure pathological conditions.

10. Of Pouting or projecting forward of the Navel.—This is an invariable accompaniment of pregnancy after the sixth month. But inasmuch as it may be the effect of other enlargements of the abdomen besides that from pregnancy, it is obvious that it requires the concurrence of other symptoms to make it a valuable test of pregnancy.

11. Overwhelming Sleepiness in the Day-time, and frightful Dreams at Night, should be placed among the doubtful signs. The remedies are, mild aperients, abstinence from the use of wine and fermented liquors, and indeed from too much indulgence in the pleasures of the table generally, together with uniformly kind treatment on the part of the husband and friends.

12. Heartburn is a rare symptom of early gestation. Its presence as a test of early pregnancy is therefore of no great value, as it is a common symptom of dyspepsia from other causes.

13. An increased Secretion of Saliva.—This is not a general accompaniment of pregnancy. It is seldom, however, an effect of distention of the uterus from any other cause than gravidity.

14. Fluor albus, pruritus of the genitals, herpetic affections of the vagina and its adjoining surfaces, moderate prolapsion of the uterus, œdematous fulness of the feet and ancles, are rather morbid accompaniments of pregnancy than specially diagnostic circumstances pointedly indicating that state: which also may be observed of certain anomalous symptoms, chiefly referable to an excessive sensibility of the nervous system; as toothach, the earach, neuralgia of the face and temples, reduced power of vision, temporary gutta serena, total and permanent blindness, tinnitus aurium and deafness, etc. etc. These symptoms will accordingly more properly come to be considered under our next head of subject.

# CHAPTER XII.

## OF THE DISEASES OF PREGNANCY.

By the diseases of pregnancy are to be understood, those maladies which are produced by pregnancy, or else such as may depend upon other primary causes, but which occur during gestation, and therefore require to be treated in connexion with, and in due subservience to the interests of, that important function.

The diseases of pregnancy have often been distributed into three divisions; each division embracing singly the diseases of three months. It often however happens that the diseases of the first three months present themselves also in the second three months. But as many of these affections are more common, whilst others moreover occur almost exclusively in the latter months, we shall distribute them under those two heads.

In all practical inquiries of this kind it is very satisfactory to know the causes of disease; for by a knowledge of the cause we are often led to a knowledge of the proper method of treating it. Among the diseases of pregnancy, there are some over which we have little or no control during the earlier months, but which become comparatively mild and manageable towards the period of quickening: sickness and vomiting are a symptom of a state of disorder of the stomach of this class. They often cannot be relieved at the period when they are most urgent: but they go off spontaneously about the time of quickening. The same remark applies to certain inconveniences which are referred to the genital passage, and which are to be ascribed to pressure of the uterus upon the neck of the bladder: inasmuch as they cannot be removed until the uterus rises in the progress of gestation above the level of the neck of the bladder.

Whereas a woman when pregnant becomes suspended as to her menstruation, this circumstance has led to the supposition, that there must exist a plethoric condition of the vessels during that state, and consequently that PLETHORA must be the cause of many of the diseases which present themselves at that period. But if this were the case, the vascular overfulness in question would be likely to affect the constitution much more in the earlier than during the latter months of pregnancy; it being a fact that the fœtus, for whose benefit it is supposed the blood is reserved, increases in bulk in the latter months over what it does in the earlier months, in the proportion

of five to one. We should therefore conclude that the retained menstrual blood could not be consumed by the fœtus in the earlier months, and that thus it might become productive of a congested state of certain portions of the mother's sanguiferous system; and that in the latter months it might require a more ample supply than could be provided for it by our supposed retention of the menstrual secretion. There are however some constitutions in which there would appear to be a greater increase of irritability than of blood. There are indeed three principal causes which have the effect of modifying the diseases of pregnancy; viz. plethora, irritation, and mechanical pressure.

Of Sickness and Vomiting in the early Months.—This is the most frequent and troublesome affection of the early months. We should first ascertain how far this sickness might be symptomatic, or whether it might not depend upon some actual disease of the stomach. When the tongue is furred, with a bitter taste in the mouth, accompanied by loss of appetite, with a disposition to an excessive discharge of saliva, there is great reason to apprehend that the stomach may be in a diseased condition. In this case we should prescribe some rhubarb and calomel, and afterwards some stomachic bitters: or, if these fail, we may find it necessary to give some mild emetic, as powder of ipecacuanha, and afterwards the stomachic bitters. The sickness and vomiting may, however, sometimes depend upon a morbid affection of some other organ. In that case it would of course follow, that the organ originally affected should be made the principal subject of treatment. When the sickness is supposed to be the effect simply of sympathy with the pregnancy, we usually, in the first instance, content ourselves with treating it by palliatives; and the saline effervescent draught is an elegant form of a palliative remedy of this kind. Soda water, if preferred in point of flavour, may be conveniently substituted. Minute doses of opium after previous evacuations may have the effect of allaying irritation. If there is any evidence or probability of an acid prevailing in the stomach, it might be necessary to combine bitters with magnesia, soda, or carbonic acid gas. If we suppose the sickness and vomiting to be an effect of intestinal or peritoneal inflammation, other symptoms of a febrile state would present themselves, accompanied by tenderness upon pressure of the part affected. We should consider what connexion such symptoms might have with the pregnancy: but of course we should bleed under those circumstances without delay, and on a scale commensurate with the activity of the febrile part of the case.

If the vomiting should appear to arise from an excessive irritability of the stomach, a small portion of crude opium, viz. a quarter or half a grain, might be advantageously from time to time exhibited. The food must be carefully regulated both as to quantity and quality. That food should be considered the best, other things being equal, which might be presumed to contain the greatest quantity of nutriment in the smallest bulk. Instead of diluents and mere slops, we should prescribe the use of farinaceous vegetables easy of digestion,

puddings made with eggs, animal jellies, strong but simple gravies, beef tea, good mutton or chicken broth warmed with condiments, etc. etc. Tea should in general be proscribed, as being frequently unpalatable to pregnant women; and cocoa or chocolate, with a good supply of milk in it, should be substituted. Something should be taken at moderately frequent intervals; that is, at intervals of about three or four hours. Ginger beer, or a very weak malt liquor in a state of brisk effervescence, might be tried from time to time, and if found to agree and to abate the disposition to nausea, might be repeated in small quantities. It has been attempted to convey nutriment to patients incapable of receiving any through the stomach, in consequence of its being constantly rejected, by the absorbents of the skin by means of rubbing in milk etc.: more nutriment however may be introduced into the system by clysters. If the stomach is become exceedingly irritable, it may be sometimes expedient to offer it nothing until the irritation shall have been entirely allayed; and to depend solely on the vicarious services of nourishing enemata. In obstinate cases it may be worth while to attempt relieving the stomach by exciting a counter irritation in the neighbourhood, as by rubefacients, and perhaps most effectually by the application of a blister to the pit of the stomach. When the symptom is very harassing, we must leave nothing untried. It has sometimes happened that this irritability of the stomach has been produced by a residence in the neighbourhood of an offensive manufactory; although at other times it had no disagreeable effect. Removal is the remedy. Abstinence from the use of medicines may occasionally be had recourse to with much advantage. A moderate general bleeding is seldom to be rejected as being either injurious or worthless.

Of a Plethoric State of the Bloodvessels.—Plethoric women suffer frequently in the early months from headach and pains of the sides, loins, and different parts of the abdomen. Where there is an evidence of a state of overfulness, it may always be remedied by venesection and spare diet. But these affections may possibly depend upon a constipated state of the bowels. It is therefore better that such patients should be put on a regular plan of obviating costiveness which may not occasion much disturbance in its operation.

Women have sometimes a difficulty in walking, at an early period of gestation, from a sense of weight and bearing down they are subject to in consequence of the enlargement of the uterus and its pressure on the surrounding parts. From the same cause they have often a difficulty in passing their urine, and now and then they cannot pass it at all. At other times they suffer from a constant desire to make water; and this or the other affection will prevail according to the part of the bladder pressed upon. When they cannot void the contents of the bladder by their natural efforts, they will require relief: but by a little management they may often be put in the way of relieving themselves: and this is to be effected by pressing up the uterus, which some women may be instructed to

do, by simply describing to them the manner of doing it, and directing them immediately to follow it up by making the effort. If this does not succeed, the water must be drawn off by means of the catheter.

Sometimes this difficulty in emptying the bladder is accompanied by a discharge from the vagina: and encountering these affections in combination, we might be led to the idea of gonorrhea, which, under the circumstances now described, is found most rarely to present itself; whence a little experience makes us very cautious of harbouring such suspicions. Of course we must never express such suspicions, excepting in the most guarded manner, or simply by interrogatories to the husband. There is always a secretion going on in the vagina; and the womb, at this time in a state of temporary descent, throws the vagina into folds, and thus increases the natural secretion to a degree which may amount to a morbid discharge. In a case of this kind the woman must endeavour to study her own comfort and convenience by keeping as much as possible in the horizontal posture, until the womb begins to rise up out of the pelvis, which takes place in the third and fourth months of gestation. The symptoms may then be expected to go off spontaneously.

Of Retroversion of the Womb.—The next complaint of the earlier months of pregnancy of any importance, is retroversion of the uterus. In a manuscript copy of Dr. Haighton's lectures, the author finds it stated, that this malposition of the womb was described upwards of a hundred years ago by a physician of Leyden. Not having been successful in his endeavours to discover the record of the description alluded to, he feels disposed to take for granted that Gregoire, a celebrated professor of midwifery at Paris, was really the first who probably gave an adequate pathological history of it; which at all events it is well known he did in 1746, to a class of English students who were at that time pursuing their professional studies in the French metropolis.

Dr. William Hunter invited the profession to a public lecture which he delivered in 1754 on a fatal case of the uterine malposition in question which had occurred in the practice of Dr. Martin Wall. See Dr. William Hunter's History of Retroversion of the Uterus in the Medical Observations and Enquiries, vols. iv. v. and vi.

The predisponent causes of retroversion of the womb are usually considered to be, a relaxed state of the general health, a relaxed state of the ligaments and peritoneal productions of the uterus, a large pelvis, and an habitual overfulness of the bladder and rectum. It appears that this malposition of the uterus has sometimes taken place gradually, and without any known occasional causes. In other cases it has succeeded pretty speedily to falls, violent exertions, and to quick or forcible movements of the body of any kind. The period of pregnancy most subject to its accession is between the third and fifth month of pregnancy inclusive.

The first symptom usually experienced in consequence of this change of

position of the womb, is difficulty and often impossibility of voiding the contents of the bladder. The bladder may previously, in consequence of accident or neglect, happen to be over-distended: the subject, being in her third month, makes the attempt to relieve herself, and experiences unexpected difficulty. She may also feel a similar call to empty the rectum, which moreover she finds herself unable to accomplish. These attempts are soon followed by an increase of bearing-down efforts, accompanied by abdominal pains of great severity. During the efforts thus frequently made and repeated, nothing comes away but mucus. Symptoms of this kind acquiring gradually but rapidly an unusual degree of intensity, an experienced medical practitioner would naturally suspect that retroversion of the uterus might very probably be the cause. His first duty would be of course to propose an examination per vaginam; and if on introducing his finger into the vagina he should find the mouth of the uterus in the middle of the pelvis, it would follow that there could be no retroversion of the womb: but if, on the contrary, he found the cavity of the pelvis to contain a large fleshy pouch filled up with a substance of considerable firmness and solidity, he would naturally conclude his case to be one of retroversion; a case of the womb lying across the pelvis from behind forwards; the fundus occupying the hollow of the sacrum, and the os uteri carried forwards and upwards, so as to be tilted against the symphysis pubis, occasioning much painful pressure against the urethra and neck of the bladder. The particular time at which the symptoms of this malposition of the uterus may come on, will depend in a great measure on the capacity of the pelvis. But independently of the agency of some accidental cause, these cases most frequently present themselves about the third month of gestation: not usually before that period, because up to that time the womb is so moderate in bulk, that, let it lie as it may, it will not produce much inconvenience; and not much after that time, because then it begins to rise above the brim of the pelvis into the cavity of the abdomen, and must require some very powerful cause to retrovert it. But there are exceptions to the principle of thus dating the advent of retroversion of the womb: for when the pelvis is distorted, there is less room for the progressive developments of the uterus, and retroversion would happen sooner; and when the pelvis is unusually large, the symptoms, for the opposite reason, might not come on so soon; perhaps not till the fifth month. The symptoms of retroversion of the uterus do not necessarily imply pregnancy; as the womb may be enlarged by diseases, and on that account become liable to be retroverted. But in general, the symptoms thus produced are not so severe, nor do they come on so suddenly; for in pregnancy the womb increases sensibly every day; and if then displaced in the manner here supposed, the effects may become urgent or fatal in a few days. But when the enlargement arises from the presence of disease, its size does not usually increase rapidly. The womb has been known to have been in a state of retroversion for years without any remarkable increase of symptoms.

There must always be some cause to produce retroversion of the womb. Over-distention of the bladder is probably the most frequent. This acts upon the fundus uteri so as gradually to throw it over; and as the bladder distends, it has also a tendency to draw up the mouth of the womb, and thus to complete the retroversion. Women should therefore be very cautious that they do not place themselves in situations where they may probably become liable to personal restraint as to the natural functions of the organs within the pelvis. Sometimes a fall has had the effect of causing retroversion, the bladder having been previously in a distended state. Without this previous distention of the bladder, it would seem however doubtful whether a fall could produce this effect. The fall should, of course, be presumed to act principally on the bladder; and the bladder to transmit the impulse to the uterus. But in the case of a fall backwards, there would be a tendency in the uterus itself to be retroverted, independently of the action of the bladder. The womb however being actually retroverted, it comes into a situation to produce a pressure upon the urethra, which will have the effect of increasing the malposition, and consequently of exasperating all the symptoms.

Retroversion of the womb may be caused by dropsy of the ovaries. When the usual symptoms have declared themselves, great care should be observed to keep the bladder empty: and if this is done, nature will sometimes restore the womb to its proper situation. This will not always happen, and the reduction, if effected, will require manual assistance. Whether it recovers its natural situation spontaneously, or is reduced by the practitioner, the bladder should not be allowed to become again distended. The patient therefore should not take much fluid, and the water should be drawn off at least TWICE a day. When the symptoms are moderate, we may perhaps go on in this way for some time; but when those of violent irritation come on, we must have recourse to more active measures. Sometimes there is great difficulty in keeping the bladder empty. The use of warm-baths may perhaps enable us to allay irritation. We must keep by us a large choice of catheters, such as small ones, flat ones, flexible, and catheters of different curves. Some cases are attended by a most urgent bearing down backwards. It will be required in such cases to have the power of throwing up enemata. For that purpose we should have a well-selected gum-elastic bottle, with a flat pipe attached to it, curved correspondingly to the curve of the sacrum. The duty of administering enemata cannot be well entrusted to the nurse; and even the practitioner must have a good knowledge of the parts as well as the adroit use of his hands, or else he will not succeed in performing it. But sometimes the pressure is so great both on the bladder and on the rectum, that we may not be able to relieve either by these palliative measures. It will therefore possibly become necessary, in order to prevent rupture of the bladder, to puncture that organ above the pubis. Dr. Cheston, of Gloucester, found himself obliged to perform that operation in a case of this kind, and the woman was much more relieved by it than he had anti-

cipated. On afterwards examining the vagina, he found that nature had made a successful effort, and had reduced the womb. The operation of reduction, if skilfully and VERY SLOWLY performed, may sometimes prove successful, although we might not have succeeded in previously emptying the bladder. To effect that object we have to place the woman on her knees and elbows, with her thighs at right angles with the rest of her body; so that the brim of the pelvis shall be turned downwards and backwards. The gravitation of the uterus in that direction might be expected to assist us in our efforts to reduce it. We have then to pass the first and second fingers of the right hand, the nails not being too long, within the sphincter ani, and some way into the rectum, following the curve of the sacrum and its caudal appendage the coccyx, till they arrive at the tumour formed by the fundus of the uterus. Upon this tumour we have to apply and keep up a steady bearing, so as gradually to raise it up. This however the young practitioner is to understand is not to be done by sudden and violent jerks; but by a gradual and steady, and by a most cautious effort. After a time, the fingers may be conducted so high as to be found not long enough to reach the fundus uteri. We may then pass an instrument that shall be of sufficient length to continue the bearing; a piece of cane, for example, of considerable thickness, with a broad, firm, and finely textured piece of sponge well secured to its top. Some have recommended the introduction of the fore-finger of the left hand into the vagina, to hook the mouth of the womb in order to depress that part of it whilst the fundus of the uterus was being attempted to be raised. When the sponged cane has borne for some time upon the retroverted fundus, the latter will sometimes be felt to pass suddenly up; because the pressure applied to it overcomes the resistance opposed to it by the base of the sacrum.

There are two cases on record, in the management of which, and after failing to effect the replacement of the uterus by the common method, the practitioner passed up his entire hand into the rectum. The author is quite convinced, from some trials of the same kind he has himself made on the dead subject, that such a thing may be done without rupture of the sphincter ani. One of the cases alluded to occurred in the practice of M. Dussausoy. The ordinary plan failed. "He then, with PROPER CAUTION, passed into the rectum the four fingers and thumb of his right hand; and spreading them on the whole convexity of the tumour, in such a manner as to embrace its entire surface, he applied considerable pressure from below upwards and from behind forwards. He thus effected his object; and instantly upon the reduction being accomplished, the practitioner's hand remained insulated and free in the rectum. The uterus having thus been restored to its proper place, the bladder was easily relieved by means of the catheter." The hand was introduced into the rectum, the reporter states, without much difficulty, and without inflicting any injury on the sphincter of the anus. M. Dussausoy was senior surgeon at the Hôtel Dieu of Lyons at the time of the operation. Journal de Médecine Chirurgie, etc. tom. lxvii. p. 283.

We may know the uterus to have been effectually reduced, if upon examination we find its orifice occupying the middle of the vagina as usual. Where there has been much difficulty in effecting its replacement, we may generally infer that there will be less likelihood of its being again retroverted. When the retroversion has happened during pregnancy, and much jamming has taken place; the child's life has been compromised, and it has almost always been expelled prematurely; and on the contrary, where there has not been much jamming, the gestation has gone on to the full period. In general, the longer the symptoms shall have continued, the greater will be the difficulty in effecting the reduction; whilst in a certain proportion of cases, the womb has been found so largely developed and so firmly fixed in its malposition, that all attempts to reduce it have completely failed. In such extreme and forlorn cases, Dr. William Hunter proposed to lessen its bulk by puncturing it through the vagina with a small trocar, and letting out the liquor amnii: and dangerous as this practice would seem to be, still upon the whole it appears less dangerous than the disease itself. The author is not aware that there is any recorded experience on this subject. We know the wide sympathies of the uterus and the fatal tendency of some of its inflammations; and therefore we should never cut into it lightly. Mr. Cruikshank once divided the symphysis pubis, in a case of this kind. Such an operation properly performed might prove a very safe proceeding; and the section being thus carefully effected, the opposite surfaces might be expected to recede from each other at least an inch without much force being used. This might set the orifice of the uterus and urethra at liberty, so as to make the reduction of the entire uterus more easy.

The womb has been known to be retroverted after delivery, when it has contracted to the same size as when three months advanced in gravidity. But in this case it lessens every day, and may be expected eventually to effect its own reduction.

Upon the whole then, from what has been stated of the history of retroversion of the uterus, and from what has long been known of its results in different cases, it seems to the author quite evident that there is not any one method of treatment that can be recommended as THE PROPER OR BEST in all sorts of cases. It has often happened that the uterus has only been very partially retroverted; that it has been only so far displaced in this respect, as to occasion some impediment to the free evacuation of the contents of the bladder; but not enough to prevent the introduction, even with some facility, of the catheter into the bladder. The cases here alluded to are perhaps of more frequent occurrence, in the first instance, than any other. So often indeed did such cases occur in the practice of some of the leading obstetricians of the metropolis towards the middle and latter part of the last century, that more than one of them wrote and published essays having for their object to recommend the sole use of the catheter in all cases, and to dissuade from all attempts to reduce. See, An account of two cases of retroverted uterus by Mr. Richard Croft,

surgeon in London. Simmons's London Medical Journal, vol. xi. p. 380. See also Practical Essays on the Management of Pregnancy and Labour, etc. by John Clarke, M. D., London, 1793. In the first of Dr. Clarke's essays the author treats the subject of retroversion of the uterus; which he says is caused by the fulness of the bladder; and proposes as the speediest remedy the drawing off of the urine, when it will regain its position. We should NOT endeavour to replace it by the method usually recommended. He moreover adds, "It is scarcely ever proper, except in the weakest constitution, to omit taking away blood from the system. Dr. Denman in the latter years of his practice seems to have pretty strongly imbibed this same doctrine. See his Introduction to the Practice of Midwifery, ad locum, where the author thinks he recommends it much too exclusively. There are unquestionably cases of retroversion where the introduction of the catheter is impracticable, until some change is previously effected in the position of the uterus. The relaxation consequent on a full bleeding followed up by enemata and fomentations, might indeed render that as well as the operation of reduction comparatively easy, after both had been previously difficult or impracticable. The operation of reduction has sometimes been found exceedingly difficult when first attempted, but subsequently, and by reason probably of some further developments incident to the gestation, it has been performed quite easily. In illustration of this point, see the history of a remarkable case of retroverted uterus terminating successfully after various fruitless attempts at reduction, by Mr. John White, surgeon, Paisley. Duncan's Medical Commentaries, vol. x. p. 254. Another case illustrative of the same fact is published in the fourth volume of Duncan's Annals, p. 284. After the usual description of the earlier symptoms of that case, its reporter Dr. Ross, then a resident physician at Hamburgh, states that he endeavoured to correct the situation of the retroverted womb in the manner recommended by Dr. Hunter, but was unsuccessful. The woman refused to permit further attempts, and she went on for some days in the same way. At length aperient medicines procured her some stools, and the author succeeded in introducing a very flexible piece of silver wire into the bladder, by means of which that organ was happily emptied of its contents. The patient no longer refused to submit to any procedure for her relief that might be deemed necessary. She was accordingly put in a convenient position for a renewed attempt to effect the reduction of the uterus; which, by means of two fingers passed into the rectum, and two of the other hand into the vagina, he succeeded in accomplishing. The subject of the case however died soon afterwards in a state of great exhaustion from the effects of her former sufferings. If after the bladder shall have been emptied the uterus should still continue to retain its retroverted position, attempts should be from time to time repeated, to effect the reduction of that organ; but upon every occasion of that kind, the contents of the bladder should be previously removed.

Of the fatal cases of retroversion which we have recorded, some appear to have been the results of extreme contusion, inflammation, and ill-conditioned suppu-

ration of the tissues. That variety of fatal result may be usually predicted from its having been preceded by the following consecution of antecedent symptoms. 1. Retention of urine, at first moderately, but afterwards more intensely painful, accompanied by a sense of great weight and fulness at the fundament together with tenesmus. 2. A sense of fulness and tearing pain in the thighs. 3. The case becoming aggravated by a violent bearing-down pain at the outlet of the pelvis. 4. Symptoms of pyrexia, great excitement of the heart and arteries, severe headach, thirst, etc. 5. The bearing-down efforts occurring in paroxysms of extreme severity; without an entire freedom from pain even during the intervals. 6. The calls to discharge the contents of the bladder and rectum becoming more frequent, and progressively more intensely distressing, and being both accompanied and followed by great anxiety, impatience, and restlessness. 7. Delirium. 8. Intermitting pulse. 9. Excessive agony. 10. Coldness of the extremities. 11. Moribund sweats, and sometimes convulsions. Death has in other cases succeeded to such violent attempts to effect the reduction of the womb as have directly inflicted fatal ruptures on the bladder and its adjoining tissues.

Looking at the average of deaths from rupture of the bladder, and comparing them respectively with their histories, the author feels pretty confident that, the majority of them are results of spontaneous rupture consequent upon over-distention of the bladder. Over-distention however of the bladder consequent upon retroversion of the womb does not necessarily, and in every case, furnish ground for a fatal prognosis: although neither reduction of the womb nor the evacuation of the bladder might be found practicable. The author was once consulted in a case of this kind by the late Mr. Overend of Sheffield. The subject of it was a woman in an inferior station of life, and not very mild in her manners, nor accommodating to the wishes of her medical attendants. Certain examinations of the state of parts within the pelvis, to which she had once before submitted having been proposed to her to be repeated, she indignantly refused, and passionately expressed her determination never to become the subject of such EXPERIMENTS again; and she kept her word. The author and his friend were thus of course very briefly superseded. Another gentleman was requested to give his attendance; but on condition that he would agree not to use instruments; meaning by that exclusively such instruments as a catheter might represent, which one of his predecessors had attempted in the gentlest manner to introduce into the bladder. Mr. Favell attended the patient subsequently, and kindly reported to the author the daily progress of the case. The fundus of the uterus had up to this time occupied the hollow of the sacrum, and its orifice had for several days been tilted against the symphysis pubis; and the distention of the bladder was such as to produce an abdominal fulness equal to that of about six months' gestation. The retention continued without the smallest relief from art or nature for some days afterwards; and the patient continued inflexibly to persist in her resolution not to admit of any

manual or instrumental assistance. Her quondam medical attendants prognosticated evil; Mr. Favell earnestly urged compliance; the patient remained firm to her purpose; and after many days of intense suffering, nature at length indicated a disposition to interpose for her relief. A dribbling of fluid, as if from a trifling leakage, was felt to escape from the orifice of the urethra. This discharge, very gradually at first, and afterwards more rapidly, increased in quantity. To make short of the account, the bladder was thus eventually spontaneously and entirely evacuated. The uterus, it is probable, recovered soon afterwards its natural situation. At all events, it is a matter of distinct recollection with the author, that the patient, in no measured terms, expressed her triumph over her miscalculating medical attendants. The present reporter of the case takes the liberty of here quoting Mr. Favell's name as a living witness competent with himself to authenticate the remarkable facts of it.

Any interesting peculiarities of cases of this kind which may have escaped sufficient notice in the above descriptive history of retroversion of the uterus may be procured without much difficulty, and their omission more than compensated by a perusal of the following references. A practitioner's reading on this subject should commence with that of Dr. Hunter's papers upon it, in the several volumes already quoted of the Medical Observations and Inquiries. A case of rupture of the bladder in consequence of retroversion of the womb. Medic. Observ. and Inquiries, vol. iv. p. 388. Dr. Cheston's case, already referred to, of successful treatment of retroversion of the womb by puncturing the bladder. Medic. Communic. vol. ii. p. 6. Another case similarly and equally successfully treated, published in Corvisart's Journal de Médecine, etc. tom. xxvii. p. 415. Of the former of these cases, the subject was about four months gone with child, and the complaint had succeeded to a fatiguing walk. All attempts to restore the uterus to its natural situation proved ineffectual; and as by the use of the catheter very little water could be obtained, the operation of puncture of the bladder was determined on, and was performed with a middle-sized trocar, about two inches above the os pubis. A quantity of offensive urine was freely discharged; the operator in the mean time moderating the rate of the discharge, in order to allow the bladder to contract. The patient experienced considerable pain and swelling of the abdomen, with a rising of phlegm in the throat, which almost produced suffocation. This was subdued by inducing expectoration; and after a discharge of offensive matter from the puncture, she gradually recovered, and was happily delivered at the full period. A case, at first of partial and ultimately of complete retroversion of the uterus, successfully treated by reduction. For a long time the malposition of the womb occasioned only a partial difficulty in relieving the bladder. In the course however of about twenty days, that viscus got enormously distended. The reporter of the case was sent for, and discovered the source of the patient's distress. By steady pressure made upon the uterine tumour by means of the practitioner's finger, the patient was enabled to make a great quan-

tity of water. On the following day the uterus was reduced. The patient was placed on her hands and knees. The practitioner introduced the two first fingers of his right hand into the rectum, and thus applied steady pressure against the tumour, and after some difficulty succeeded in its reduction. He felt by means of a finger of the other hand introduced into the vagina, that the os tincæ had now got down into its proper situation; whilst the patient also on her part expressed a sense of consciousness that the viscera had recovered their proper situations in the hypogastrium. Communicated by M. Vandorpe, a surgeon of Courtrai, in Flanders. Journal de Méd. Chirurg. et Pharm. tom. lxi. p. 64. A case of retroversion of the uterus consequent upon obstinate costiveness in a woman not stated to have been pregnant. The facts of this history appear to the author to have been too loosely put together to give it much positive value. It is stated, as it were casually, that reduction had been successfully effected. Communicated by Desgranges, Graduate of the Royal Acad. of Surgery, Journ. de Méd. Ch. et Pharm. lxvi. p. 85. An interesting example of the uterus recovering its natural situation, SOME DAYS SUBSEQUENTLY to attempts made to replace it, although they proved utterly fruitless at the time. The reporter found it exceedingly easy to pass the WHOLE of his hand into the rectum. The subject of the history proceeded prosperously in her gestation till the eighth month, when she sustained a violent fall which threw her into premature labour. The child was, however, born alive, and lived eight days. Communicated by M. Vermandois, a surgeon at Bourg, Journal de Médecine Chirurg. et Pharmac. tom. lxxxviii. p. 34. A case of retroversion of the uterus, and failure of attempts to reduce, followed by a fatal event, Perfect's Cases in Midwifery, vol. i. case 68, p. 394. A case of retroversion of the womb, in which reduction was easily effected, Heath's Translation of Baudelocque's Treatise on Midwifery, vol. i. p. 164. A case of a scarcely completed retroversion of the womb greatly relieved by the use of the catheter, and ultimately cured by reduction of the uterus. Simmons's Medical Journal, vol. i. p. 392, abridged from the Transactions of the Royal Medical Society of Copenhagen, vol. ii. A case of retroversion of an uterus recently gravid, which produced retention of urine. The bladder, in consequence of extreme over-distention, gave way, its contents escaping into the abdominal cavity. M. Saxtorph, the reporter of the case, ascribes the original displacement of the womb to unskilful extraction of the placenta. Quoted from the second volume of the Danish Transactions, Comment. de Reb. in Scient. Med. et Nat. vol. xxiii. p. 121. A case of reduction of a retroverted uterus easily effected. The displacement of the uterus was produced by an effort to lift a heavy body. The greatest quantity of urine drawn off at any one time by means of the catheter was eight pints and a half. The reduction of the uterus was afterwards easily effected by the usual procedure of passing two fingers into the rectum, and bearing a steady pressure against the fundus of the uterus. Communicated by Dr. John Evans of Oswestry, Medical and Philosophical

Commentaries, vol. vi. part 2. p. 215. Immediately following the above case, we have another inserted in the same volume of Duncan's Commentaries, communicated by Dr. Swan of Dumbarton. The subject of the latter was a Mrs. M'Donald; who was seized with bearing-down pains and retention of urine, in consequence of a fall over a wall, which happened to her in the third month of her gestation. Dr. Swan found on examination that the fundus of the uterus had fallen down upon the outlet of the pelvis, and that it presented like a large ball at the anus and os externum; that part of the vagina was fallen, in consequence of being inverted, without the os externum, and that the os tincæ was carried forwards and upwards towards the symphysis pubis, so as to press painfully against the neck of the bladder. Dr. Swan drew off about six pounds of urine with the catheter; but the parts were so rigid, dry, and inflamed, that the patient could scarcely bear them to be touched. She was therefore bled, and had emollient clysters and fomentations. On the subsequent day, four pints of water were drawn off, and the parts not being so inflamed and painful, the medical attendant introduced a finger into the vagina, and another into the rectum, and restored the uterus to its proper position. The patient kept quiet in bed for some time, recovered very satisfactorily, and was happily delivered at the full period of her gestation. Med. and Philosoph. Comment. vol. vi. pt. 2, p. 217. Dr. Cheston's case, already mentioned, was first published in the Medical Communications and Enquiries, vol. ii. p. 6. See especially an extraordinary case of retroversion of the womb at a late period of gestation, by Dr. Samuel Merriman: being the substance of a tract by that intelligent writer entitled a Dissertation on Retroversion of the Womb, including some observations on extra-uterine gestation. 8vo. London, 1810.

Of the Diseases of the Latter Months of Pregnancy.—Those which are very distressing in the early months sometimes continue to harass the patient to a late period of gestation. One of these, and a very important one, is sickness and vomiting. This functional derangement of the stomach breaks down the health very much, and sometimes even endangers life. For this sickness, especially of the latter months, the whole of the Materia Medica has sometimes been ransacked in vain for a remedy. All changes of position and of circumstances, change of residence, all possible attention to the best rules, of personal management, and the punctual observance of the best precepts on the subjects of diet and regimen, have often been adopted and pursued without being followed by the slightest mitigation of the symptom. As a last resource, and in cases of extreme intensity, threatening destruction of life, the operation for the induction of premature labour has been occasionally proposed, but very rarely entertained and made available for the patient's preservation. The author is in possession of notes of a case of this description which occurred in the practice of the late Dr. Haighton; and as they were taken as nearly as possible in the very words of that eminent teacher, the reader he is sure will be gratified

by a perusal of them. "Some time ago I was applied to by a lady in the city. In her first and second pregnancy, the sickness was so obstinate that nothing could relieve it but delivery. In one of her gestations she went her full time; in another only to the seventh month; but on both occasions she was equally relieved by delivery. In her second pregnancy the vomiting had not been extremely violent. When I saw her, it was in her fourth pregnancy, and about the sixth month of gestation. The practitioner who attended her had treated her very properly, but without success. I ordered something; but it had no better effect. She was removed into the country, but she went no further than Islington; and she returned without receiving any benefit. She was then in her seventh month. Her sickness grew worse; but it underwent some changes: for sometimes it would be very violent, and then it would intermit. The intermission, however, would last but a short time, and then it would end in a violent diarrhœa; and if means were used to stop the looseness, then the sickness immediately returned. In this way she went on until she was very much reduced. During a few days in the progress of this exhaustion, I observed that her strength declined much faster than before. I therefore expressed to her mother my wish to be permitted to invite a tendency to labour. No obstacle was thrown in my way. I put her into a hip-bath: but this increased her symptoms without producing the effect I hoped from it. It was now the middle of the seventh month; and I saw she could not live till the ninth. I therefore proposed to bring on premature labour. But not liking to take the whole of the responsibility on myself, I desired the friends to send for some respectable person to meet me. The gentleman who came fell readily into my ideas; but did not see that the danger was so pressing. He therefore thought it better to wait for a fortnight longer. Seeing that this was the only point with him, I urged my own opinion with this argument; viz. which was most likely to estimate the danger correctly, HE, who had taken a transient view of the case, or I, who had watched it day after day? He allowed the strength of the argument; but said he would rather turn it over in his mind, and meet me again in the evening. At this time, unluckily for the patient, she had retained about half a pound of nourishment, and the sickness had not increased. He thought it proper therefore again to defer the operation; although I explained that this was only one of those delusive intervals which terminated in diarrhœa. So indeed it proved; for next day she was exceedingly ill. I now told him, if he had not made up his mind, that I had. I added, that if he chose to undertake the bringing on of premature labour, he might; but I thought the time was past; and so did he. In two days more the patient sunk. Now, I do not think it right to say, that this woman would have recovered, if premature labour had been brought on in proper time; but it is my opinion that it would have given her a great chance."

The author has performed the induction of premature labour in the circumstances above described three times. In one of them it was had recourse to

in the seventh month, the patient having made an error of one month in her reckoning. The child, which was born alive, died in about two hours afterwards; the mother was soon and perfectly restored. The second case was, on the whole, more prosperous. The child, which had the appearance of one of eight months' growth, was given to a wet nurse who lived in the house, and who took excellent care of it. The mother also eventually recovered. Her sickness left her immediately after delivery; but she was the subject of feeble health accompanied by a dyspeptic state of stomach for some years afterwards. The subject of the third case might be said to have been in a cachectic condition before her pregnancy. When arrived at her sixth month inclusive, she was exceedingly harassed by an intense irritative fever the effect of inanition, as the author supposed, which threatened a speedy and an alarming issue. The operation for the induction of premature labour was performed The child of course was lost. The mother recovered rather rapidly, and enjoyed moderately good health afterwards, and has since borne several living children at the full period.

Of Jaundice during advanced Gestation.—Pregnant women are sometimes attacked with jaundice at an advanced period of their gestation; and it devolves upon the practitioner to consider well whether it may not depend upon actual disease co-existing with the pregnancy, or whether it may not simply depend on sympathy directly or indirectly with the actions of the gravid uterus. It may moreover be produced by pressure upon the vascular tissues, called Glisson's capsule. We should of course expect this variety of jaundice to be produced only about the fifth and sixth months of gestation; gravidity being presumed to be its cause. Active remedies are not necessary.

A woman may be the subject during pregnancy of biliary concretions. The jaundice thence resulting must be treated on common principles; but we should pause before we administer the usual remedy, a brisk emetic; as, by no great improbability, it might have the untoward effect of causing abortion. In such a case our prognosis should be more unfavourable than if the jaundice was deemed to be merely an effect of sympathy with the actions of the gravid uterus. The author recollects two cases of jaundice thus complicated whose subjects were admitted into a public hospital. Both of them were pregnant. One was married, and gave intimation of her being pregnant; the other was not married, and concealed her situation. The first was received into the hospital as a subject of tertian ague, for which one of the physicians prescribed bark. But the bark disagreed, and produced vomiting and abortion. In two days afterwards the whole of the jaundice had disappeared. She had advanced in her pregnancy about five months. The other being an unmarried woman, omitted to mention the fact of her pregnancy. She was treated actively for jaundice by another physician, who gave her emetics. Part of her ovum came away, and was followed by a sanguineous discharge. She then confessed that she was

pregnant. The emetics were laid aside, and innocent placebos were substituted. All her jaundice left her, and in a few days subsequently she was delivered of the remainder of her ovum. When the jaundice is a mere effect of gestation, it is not to be considered alarming. It may cure itself; although there can be no objection to attempt the removal of it by a moderate quantity of rhubarb and calomel. If not relieved by these means, it will probably be discovered not to depend upon pregnancy as a matter of mere sympathy, but upon the agency of some coexisting disease.

Women during the latter months of gestation are generally, or at least not unfrequently, liable to COSTIVENESS; or, if naturally disposed to constipation, the state of pregnancy is very apt to increase it. Fæculent accumulations under these circumstances may take place and occasion severe colic, such violent abdominal pains as a woman near her time may very excusably mistake for those of incipient labour. Under sufferings of this description, a single day should not be allowed to pass without procuring an evacuation by the bowels. Where this duty has been neglected, great quantities of fæces have accumulated in the rectum, and there have become so much indurated as to have formed an impediment to the descent of the column immediately above. This by its reaction has produced tenesmus, painful gripings, and watery evacuations. On proper examination, the rectum has been found enormously distended with hardened fæces; between which and the intestine, a groove or channel has sometimes been formed by the forcible action of the bowels from above, by which these watery evacuations were discharged. In the more neglected forms of fæcal accumulations of this kind, mechanical implements of various sorts have been made use of to break down the masses of hardened fæces here described, in order to make way for the administration of enemata; such as bougies, suppositories, etc.: but of these, the best perhaps is a narrowish marrow spoon, of two or three inches length of blade, and slightly curved. This operation should be followed up by a moderately active course of aperients, together with enemata. The occasional use of milder aperients, such as rhubarb and magnesia, castor oil, or small doses of Epsom salts, should be taken subsequently, if indicated even by a TENDENCY to tardiness of the bowels during the remainder of the gestation.

ANOTHER DISEASE to which women are subject during pregnancy is HEMORRHÖIDS. It is scarcely necessary here to enter into an explanation of the connexion of piles with pregnancy. Many women, by reason of the pressure of the gravid uterus upon the systems of bloodvessels, especially the veins which have their locality in and in the immediate neighbourhood of the pelvis, are apt to have the piles during pregnancy, although not subject to them at other times. Hemorrhöidal affections are commonly divided into blind and bleeding piles. Some German writers have moreover added another variety, of which the distinctive character is, that the local affection is usually preceded by severe griping pains, thence called hemorrhöidal colic. When the colic is obstinate,

and the pain is presumed to have nearly reached the end of the colon, the common practice is to expedite the appearance of the piles, by causing the patient to sit over the vapour of hot water, and directing her to force down: but in cases of this kind free bleeding from the arm should seldom be dispensed with. Hemorrhöids in pregnant women, it is obvious, must have a special reference to the patient's condition. They are no doubt occasioned, in the greater number of cases, by pressure of the gravid uterus on the hemorrhöidal veins, thus obstructing the return of their blood into the general circulation, and consequently producing those bulbous swellings and bleedings incident to the disease. As we cannot remove this pressure, we should understand how constipation of the bowels must add to the obstruction produced by it. Therefore to prevent this result at all events, laxative medicines, such as electuary of senna, castor oil, and sulphate of magnesia, should be freely exhibited. Topical applications must often be added to reduce the swelling and to relieve pain. Leeches are excellent operators in these cases. The vessels of the parts are usually so tensely distended, that about a dozen leeches applied at once to the immediate neighbourhood of the anus, might be expected to be followed by a discharge of eight or ten ounces of blood. After the assiduous use of fomentations for some hours, the employment of astringent lotions, especially the acetat of lead water, will often be found to produce excellent effects. In extremely painful cases, accompanied by much fever, general bleeding must be premised and made a leading measure. In cases of inward piles, in addition to proper constitutional measures, it will prove an useful practice to administer an emollient enema, consisting of decoction of oatmeal or barley, with the addition of half a drachm or a drachm of the tincture of opium from time to time; the quantity of opium to be proportioned to the severity of the pain and its effects on that symptom.

There are some other diseases of pregnancy occasioned by pressure on the sanguiferous vessels and the absorbents within the pelvis.

The pressure here supposed is, for example, a cause of ŒDEMA of the parts below. The œdema thus produced should be carefully distinguished from dropsical effusion caused by constitutional disease. In the one case, when the pressure is taken off, the œdema disappears. When the effect exclusively of mechanical pressure, and the patient in other respects enjoys good health, the œdema will be found unaccompanied by any other symptoms of general dropsy. All the inconvenience complained of will be merely the distention of the lower extremities. If the œdema should arrive at a state of extremely painful distention of the integuments, the medical attendant should exhibit mild but efficient aperients, such as might produce a moderately relaxed state of the bowels; and direct the use of rollers or laced stockings to give support to the over-distended vessels of the part. If the distention is so great as to threaten erysipelas, a moderate scarification of the feet at the instep may have the effect of relieving it: and there would be no danger of much inflammation nor of mortification

from that procedure. If therefore the distress is such as to keep the patient perpetually awake, it should be done without hesitation. These swellings immediately disappear after delivery. The author had once a patient in whom the SUPERFICIAL ABSORBENTS were as large as goose quills: but he could not relieve the swelling. The patient believed herself to be in a dropsy; and that idea caused her much distress. But when she was delivered, the swelling immediately disappeared.

PREGNANT WOMEN ARE SOMETIMES PAINFULLY DISTURBED BY THE MOTIONS OF THE CHILD. When this happens, it may be necessary to do at least or to attempt something for their relief. Experience would seem to justify the moderate use of opiates in these cases. Some have conjectured, that opiates might produce bad effects on the intestines of the child; but experience has not confirmed this apprehension.

Sometimes dark spots appear on the integuments of the abdomen from the rupture of cutaneous vessels. Women are often much alarmed at this appearance, considering them to be spots of mortification. When the health is good, they again speedily disappear, in consequence of an adequately vigorous action of the absorbents. If the constitution however be not good, we may prescribe tonics, a generous diet, and moderate exercise in the open air.

Females occasionally towards the latter end of gestation complain of PAINS IN THE GROINS, owing to the round ligaments being put upon the stretch. From this idea of the cause, it is clear that external applications can do no great good: but they may palliate; and as we shall be expected to do something, we may direct some mild liniment with a few drops of a pleasant essential oil to be applied, and at the same time assure our patients that all inconvenience will cease after delivery. Allied to this affection of the groins, is a pain occasionally complained of, felt at the lower part of the hypogastrium, caused by the resting of the gravid uterus on the sharp edge of the pubis. Raising the womb sometimes gives relief; and that relief is rendered permanent by keeping it supported by means of a suspensory bandage. This supporter may consist of a broad belt to sustain the weight of the projecting hypogastrium, to be attached by means of intermediate lateral straps between the ends of the belt and fixed points at or near the anterior projection of each shoulder. This apparatus, however apparently well calculated to answer its purpose, cannot always be worn for more than two or three days together; the patients usually complaining in such cases of a stifling sense of oppression in their breathing accompanied by intolerable restlessness.

Women who have had many children are occasionally the subjects of pain in the integuments of the abdomen. This is the effect of cicatrices left by former pregnancies giving way. Little in these cases is necessary to be done; and that little may consist in gentle friction of the parts complained of with small quantities of the ceratum plumbi compositum. Should the pain be very severe, or even exceedingly troublesome, it might be necessary to

have recourse to fomentations with flannel wrung out of hot water, or a decoction of poppy heads and the other ingredients usually supplied for that purpose.

Of Diseases existing during Pregnancy, which, although forming no essential attribute of that function, might nevertheless compromise its safety and prosperity. — Of such accidental accompaniments we may first notice the ordinary forms of syphilis. When there is nothing more than gonorrhea, this being for the most part a local affection, it may be cured by very simple means. When in the form either of chancres or of actual syphilis, it will require mercury: and in cases where it has taken deep hold, it has been thought necessary to carry the mercurial action to a great extent. But a thorough mercurial charge, be it recollected, is exceedingly liable to produce abortion. The degree however of this liability would seem to depend upon the period of pregnancy. When pregnancy is advanced, and a chancre only appears, this will convey the poison to the glands of the groin, and buboes will appear; but sometimes the local affection may remain for a few weeks or months without producing any evident change in the constitution. There is no fixed period between the appearance of a chancre and the constitutional sympathies which it rouses into action. A fortnight may probably elapse; more commonly five or six weeks intervene; but in some few cases, the interval is so long as to make it doubtful whether there may not have been a fresh application of the poison. The constitutional changes now more especially alluded to, are sore throat, copper-coloured spots, nodes, etc. Chancres may be removed with but little mercury, and they often go off without any at all. But much is required to prevent the constitution from being infected. It has of late years been a rather current doctrine, that when the first symptoms shall have been cured, we may cease to give mercury: but this will not prevent the constitution from being affected. Others entertaining the opposite opinion, are in the habit of exhibiting a sufficient quantity in every case to ensure the prevention of a constitutional affection; and this they continue for some time after the first symptoms shall have entirely disappeared. If there should be a chancre in an advanced stage of pregnancy, it appears to the author, that it might be advisable to exhibit a small quantity of mercury, just enough to make the mouth tender without producing salivation. If there be also a sore throat, we may use a solution of corrosive sublimate as a gargle. A quarter of a grain of the oxymuriate of mercury dissolved in four ounces of distilled water will make a proper lotion for this purpose. The same preparation of mercury may also be exhibited at the same time internally, in doses of between one eighth to one fourth of a grain twice a-day. The latter quantity should be considered a rather large dose. In this way the disorder may sometimes be suspended for a short time, and therefore in advanced cases till after delivery; when of course it might be necessary to recur to more powerful means; viz. such means, with certain

modifications, as might be judged proper under ordinary circumstances. In this way we can often prevent the constitution from suffering very seriously, until the interests of the gestation shall have been happily secured. If however, instead of this cautious procedure, salivation is produced, and indeed this may be necessary in some cases, then abortion becomes almost an inevitable consequence. The author is indeed of opinion that a mercurial charge sufficient to produce much febrile excitement is almost as effectual a promoter of abortion as the steel instrument usually employed to perform the operation for the induction of premature labour.

Of Ascites complicated with Pregnancy in the latter months.—When this form of dropsy presents itself during pregnancy, several important circumstances might press upon our attention, and demand our earliest and most deliberate consideration. We are sometimes asked whether the delivery may not be rendered difficult by it; at other times whether the patient might be expected to survive her delivery; and in other cases whether the child might be expected to inherit its mother's malady. When the abdomen is enormously large, it is sometimes asked whether tapping might not give relief; or how far delivery might or might not contribute towards a cure. There is in the first place no solid reason for apprehending much additional difficulty in the labour; although if we were to theorize a little on the subject, we might indeed anticipate something like difficulty: for as the diaphragm and abdominal muscles act as auxiliaries to the uterus in the business of expelling the fœtus, it is evident when the abdomen is greatly distended with hydropic fluid, that a great portion of the expelling power must be taken off; and this at the first glance might give us an idea of difficulty: but when we consider that in these cases there is a great tendency to a relaxation of tissues as well as of the general health, our difficulty must vanish; for less expelling power will be required; and experience proves that labours under these circumstances are not usually very difficult. In the next place, may a woman be expected to live or to sink after delivery? The answer to this question will depend upon the actual state of her health, or rather upon the precise nature, period of development, and intensity of her complaint. Some have been subjects of dropsy at an early period of gestation, and have consequently been able to go through the incidents and changes of two successive pregnancies before it has destroyed them. But if the constitution be already broken down by a previous disease of long duration, the same result could not be reasonably expected; for parturition itself is attended with an effort, as well as with more or less of loss of blood. If extremely reduced before the accession of labour, we cannot expect that a woman will do well. Some therefore only survive a few hours, and others only a few days. Therefore our prognosis in such cases must be unfavourable, or at any rate very guarded. Again, will the child be subject to have the mother's disease? This question can only be answered by an appeal to experience; and from experience we know, that women with dropsy have often very lively and healthy children; and that others, who had been per-

fectly healthy during their gestation, have had children with water in different parts; some for example in the abdomen, others in the chest, and others in the head. Finally, might it not be proper to have recourse to tapping? We cannot wonder, that in cases of this kind women suffer great pain from distention: as there is a double cause for it, viz. the pregnancy and the dropsical fluid. The great distress which the patient suffers from distention very naturally induces her to inquire whether tapping could not be performed in her case. In general, a professed surgeon would not like to do this; as there might be some danger of puncturing the womb. But without disputing this statement, the difficulty might perhaps be got over. There is considerable caution required in tapping a pregnant woman, especially in the last months of her gestation. If however, on examination, the uterus is not found materially enlarged, we may draw off the water with impunity. If on the contrary the uterus is found to contribute more than the water to the size of the abdomen, then it is LESS safe to tap. But even in this case, there is a possibility of tapping: but not in the common way. A lancet must be introduced into a prominent part of the abdomen with the following precautions. The instrument is not to be carried so far as to penetrate through the entire wall of the abdomen; but an incision is to be made only through the integuments in the first instance; and then very carefully through a small portion of peritoneum. If upon this no water escapes, then we pass a probe into the wound, and also enlarge the incision in the peritoneum. The probe may at the same time be made available as a guide to the canula. If the swelling of the abdomen be merely the effect of the uterine development, that will be to be distinguished by the usual incompressible feel which characterizes the uterus in its pregnant state. If there should be a combination of water and pregnancy, the fingers on pressing the abdomen will at first and until they reach the uterus cause a moderate recession of the part, and then they become sensible of the incompressible feel alluded to. If we gently strike the abdomen, there is moreover in this case given a sense of undulation. It is indeed possible that an excessive quantity of liquor amnii might be the cause of the enlargement as well as of the feel of a fluctuating fluid. Therefore every accessible method should be used for ascertaining the true nature of the swelling. As a general rule, when there is great pain and distention of the abdomen, and the water should appear more the cause of the bulk than the pregnancy, in such a case it might be right to tap. Will delivery cure the disease? It is natural enough for women to think that delivery might cure them; as they know that water is voided at the time of labour, and they cannot be expected to know whether it comes from the uterus or from the abdomen, or whether these cavities may or may not be identical. Although the abdominal water of ascites and the liquor amnii are in distinct cavities; yet it has happened in some rare instances that the water in the cavity of the abdomen has made its escape through the uterus. In these cases the water insinuates itself into the fallopian tubes; the fimbriated terminations of those tubes opening into the pelvis, and the

other ends into the cavity of the uterus. The hydropic water is supposed to insinuate itself into the fallopian tubes after the expulsion of the fœtus. It has also been supposed that something more than mechanical action must be the cause of this : for it has sometimes been observed, when there has been a brisk discharge, that a sudden cessation of it has taken place. It might therefore be concluded that as long as the tubes are pervious, agreeably to the idea of a mechanical insinuation of the water into them; or as long as they are disposed to act as living tubes, so as to perform the function of absorption, agreeably to the other idea; parturition might be looked to as a natural cure for dropsy of the abdomen. But such hopes are not likely often to be realized. The fallopian tubes may indeed sometimes act as absorbents, and take up all the accumulated fluid in the manner stated. The author has known one woman who had several of these accumulations pass through the uterus, or at least discharged by the way of the genital passage. After that result, and by the use of warm medicines and chalybeates, she entirely recovered her health. Some time subsequently she became pregnant, and afterwards did quite well. Upon the whole, therefore, our answer should be, that sometimes the disease is cured by delivery, and sometimes not; so as neither much to elevate, nor, on the other hand, greatly to depress, the hopes of the patient.

The next disease which may be accidentally complicated with advanced pregnancy is hernia. In the treatment and prognosis of this case, it makes an essential difference whether the hernia is reducible or irreducible. If reducible, pregnancy produces no ill effects. The protrusion might happen at different parts, as at the external ring, the linea alba, navel, etc. If the protrusion presents at a low locality, we may observe in general that it is gradually reduced as the womb rises in the progress of gestation, and that it remains reduced till after delivery. But we are not to suppose it cured ; for it is only mechanically supported in a state of reduction ; and when the patient shall begin to get up and go about, it will again re-appear. But sometimes pregnancy has a direct tendency to produce hernia. When, for example, the womb is large and swelled inordinately laterally, it may easily cause a protrusion of the intestines at the upper extremity of the linea alba, through the ring, or under Poupart's ligament. The author has known several patients who were always the subjects of hernia during pregnancy, but at no other time. The protruded intestine in such cases is usually reduced with considerable facility. In cases where there is weakness of the abdominal parietes at the navel, we might have a protrusion at this part about the sixth month ; but as the womb rises higher, it is again reduced in the further progress of gestation.

If the hernia is irreducible ; we will suppose it may be at the ring ; when the womb rises, it exerts the same force of attraction upwards as it had previously exerted ; and instead of reducing it, which we suppose it might not be able to do, it must drag it up into a state of strangulation. But the intestines are also liable to become strangulated in this situation from the same cause as in the male

subject, viz. from an accumulation of fæces. If therefore we might chance to know a woman to have a hernia of this kind, we should of course feel it our duty to put her upon a proper plan to keep her bowels regularly open, and thus to guard against the operation at least of that cause. We should moreover inform our patient of her liability, from the intestine being situated as now supposed, to become the subject of strangulated hernia, and also of the nature of the symptoms which might be expected to take place in the event of such strangulation: and upon the occurrence of such symptoms, it would be of all things most important to leave strongly impressed on her mind the necessity of sending for her surgeon without a moment's loss of time. Without all this intelligence and attention, medicines might be sent to allay sickness and vomiting, whilst the inflammation of the strangulated gut might be making rapid progress towards mortification.

We will next suppose that the patient has duly attended to the duty prescribed to her of keeping her bowels regularly open; and that symptoms of strangulated hernia have nevertheless come on, and that she has informed the practitioner of the actual accession of the characteristic symptoms of the disease; what ought that person to do? He certainly ought in the first place to make an attempt to reduce it by common means, viz. by bleeding, by the use of the warm-bath, and the taxis. If it cannot be reduced in this way, it becomes at once a case for the operating surgeon. But gentlemen of this class are apt to start objections; for they are not fond of performing operations on pregnant women. They sometimes object on account of the mere possibility of there being adhesions, such as might be difficult to overcome. But difficulties of this kind are more imaginary than real. After removing the stricture, surgeons usually open the sac and remove its contents, leaving the sac afterwards to occupy its former place. The late Dr. Monro proposed to remove the stricture and then to return the sac without opening it. Others however have reasonably objected to this procedure, that in the case supposed we should not know whether any part of the intestine might be mortified or not. This indeed is generally made an excuse for opening the sac, although no hesitation is ever made about returning it, whenever it is found practicable to effect the reduction, without an incision. Another objection which has sometimes been made under these circumstances is, that the stricture may be situated at the mouth of the sac. If this is suspected or feared, a small opening might be made, one just sufficient to ascertain the point. But suppose the operating surgeon in such a case to make an appeal to the obstetric practitioner as to the alternative of delivering or not. What then should be considered the resources of the latter gentleman in such a case? If we could lessen the size of the womb VERY SPEEDILY, we might possibly do some good. It would be as well at all events to ascertain the state of forwardness of the pregnancy by examination, and to deliberate on the degree of probability, that by rupturing the membranes and having recourse to the usual means for promoting the dilatation of the orifice of the uterus,

we might be able to bring on labour soon enough to meet the urgent demands of such a case. But this is not often to be done by any sudden exertion. Nature in most cases would be found unprepared for the emergency. So that an injudicious attempt to accomplish an object, no doubt very desirable, might only be adding one mischief to another. Hence the possibility that a measure of this kind might be required at such a juncture, should be present with the practitioner's mind at an early period; inasmuch as it would generally too late to rupture the membranes after the accession of urgent symptoms. With respect to the proper procedure to adopt with a view to the bringing on of delivery, that must in some respects depend on the circumstances of the case. If by endeavouring to dilate the mouth of the womb we should succeed in exciting that organ to parturient action, the child might very probably be expelled by the subsequent exertion of the natural powers without any additional means; and as at this period it would be comparatively small, no great effort might perhaps be required. But should such efforts be wanting, we must have recourse to artificial means, such as the use of a pair of long forceps, or of the hand, as an instrument of turning. The choice of these methods must depend upon circumstances; but if the mouth of the uterus be very rigid, the art of midwifery could furnish little or no resource.

The next subject which claims our attention is that of CALCULOUS AFFECTIONS, BOTH BILIARY AND URINARY.

OF BILIARY CALCULI.—The first consideration with respect to biliary concretions regards the distinction to be made between the pains produced by the passing of a calculus and those of labour. When a biliary calculus is passing, the seat of the pain is the scrobiculus cordis; whence it shoots back to the spine and shoulders.

The pains of labour usually begin at the loins, and thence pass forward towards the sides, and from the sides to the fore part of the abdomen. Then there is generally an interval of rest for fifteen or twenty minutes if the labour be incipient, or five or ten if more advanced. The pain of labour as it advances still further, gets gradually stronger and the intervals shorter.

In passing gall-stones the pain sometimes remits; and it may be accompanied by much sickness and vomiting; which however we find sometimes to attend labour pains.

It has been asserted, when a biliary calculus is passing, that the pulse is remarkably retarded. But there are exceptions to this rule; therefore the statement predicated is not absolute and universal in its application.

When a calculus gets into the ductus choledochus communis, jaundice is produced; and when it gets near the end of the duct, the pain is exceedingly severe, owing to its oblique termination in the duodenum and the contractions of the intestine. This has the effect of increasing the pain, and of leaving a sense of soreness of the part, after the calculus shall have passed into the

duodenum. Soon after this transit shall have taken place, the bilious motions follow.

Some constitutions are so prone to the formation of biliary calculi that we often find it impossible to prevent it. The treatment of this disease is therefore more simple than effectual. During the paroxysm, we should prescribe blue pill and opium; the latter in the dose of a grain and a half or two grains every four or five hours. Fomentations with flannels wrung out of hot water, may sometimes be made available for allaying irritation and mitigating the violence of the pain. But there are some of those cases in which scarcely any thing operates as a palliative. There are others in which we find it impossible to promote their passage through the duct; which then may become ulcerated all the way from the gall-bladder to the duodenum. It would be well if we could always prevent these paroxysms during pregnancy; but we are frequently unable to foresee their accession. Mercurial and aloetic medicines, with soap and the mineral alkalies, have been severally recommended as prophylactics. The principle of preventing constipation both of the liver and the bowels, would certainly seem well calculated to meet the proposed indication; but we cannot deny that we meet with numerous examples of their failure.

Of Urinary Concretions.—The pelvis of the kidney is sometimes filled up with calculous matter; and when this is the case it is productive of great pain. Sometimes this pain is accompanied by much febrile excitement, and the disease receives the designation of nephritis; but the painful affection is sometimes unattended by fever, and is then called nephralgia. Our having to treat the former and not the latter of these, or the contrary, must therefore depend on the degree of fever, and pain respectively accompanying them. If we have only pain, our remedies must be anodynes and soothing medicines and measures, as opiates, mucilaginous and demulcent drinks, the hip-bath, the warm-bath, fomentations, etc. etc. When there is also fever, active antiphlogistic measures must be pursued; such as venesection, local bleeding, aperient medicines; but there here seems some room for choice. The purgatives should be cooling, and not those that are of a heating character. Saline purgatives are sometimes preferred, because they are supposed to pass in a great measure unchanged to the kidneys. Castor oil is also a mild aperient. Drastic extracts should be avoided.

The drinks of nephritics should be mucilaginous and diluent. When a calculus shall have passed into either ureter, there will be pain in the corresponding loin, which will be felt descending lower and lower in the direction of the pelvis. This pain will be most severe when the calculus shall have arrived at the lower part of the ureter, where it enters obliquely into the bladder. There is therefore the same difficulty to overcome before an urinary calculus enters into the bladder as before a biliary calculus enters into the duodenum. When about to enter into the bladder, the irritated muscular

fibres of the bladder contract upon the calculus very forcibly, which occasions the pain that is so acutely felt at this moment. Upon its entry into the bladder the pain suddenly ceases. When however it shall have got into that viscus, the patient will become liable to the symptoms which stone in the bladder is generally known to produce. But the degree of the pain may depend in a great measure on the occupation of the patient. If that be sedentary, she may feel but little inconvenience from it; but if active, great irritation may be produced by it. She will be subject to occasional discharges of mucus, forcing pains, and bloody urine in small quantities. Urinary calculi after being received into the bladder are known to grow sometimes very rapidly in magnitude. This fact being duly considered, and the above symptoms fully recognised, it would be the duty of the practitioner to propose an examination of the state of the bladder, with the sound; as a calculus of this kind might oppose no inconsiderable obstacle to parturition. Whilst the sound is passed into the bladder, a finger should be introduced into the vagina to ensure a correct judgment of the point to be ascertained. If there should be a stone found, a question would arise as to its probable effects in connexion with the pregnancy. Practitioners in surgery do not like to perform capital operations during gestation. But a case like this should make an exception, as the retention of the calculus might be attended with much irritation and distress during the remainder of the pregnancy, and possibly with fatal effects, during parturition. But as the urethra is very short and dilatable in the female, it might often be made to give way sufficiently for the expulsion or removal of the calculus without cutting, and even without the incomparably safer operation of lithotrity, which perhaps might be considered almost equally formidable by a pregnant woman. With respect to the employment of the blunt gorget to effect the dilatation required, few practitioners could be relied on for the exercise of sufficient patience to use it with safety. By using too much force, we might do irreparable mischief.

It has been proposed to pass a piece of intestine into the urethra. It must be made up at one end, and connected to a syringe at the other; so as to admit of being filled with a fluid after its proper introduction into the urethra. This contrivance is probably, and at all events very plausibly, borrowed from the presumed effect of the bag of membranes in labour, in dilating the mouth of the womb. See Bloomfield's Observations and Cases, vol. ii.

Should the urethra not be disposed to dilate, it then might become a professional duty to consider whether an operation should not be performed; and what that operation should be. Having seen the operation of lithotrity performed on several occasions by the Baron Heurteloup, the author feels himself compelled to recommend that operation in preference to every other. But the old operation of cutting is much more simple in the female than in the male. This consists in cutting into the urethra from the vagina, and dilating it laterally, the cutting instrument being conducted on a director; although, if this be

carried too wide, it might divide either partially or wholly one of the crura clitoridis. The plexus retiformis being vascular, some hemorrhage might probably attend the operation; but nothing of great consequence. The meatus being thus sufficiently divided and dilated, the forceps are to be introduced, and the stone extracted. All this may be done in good time, provided the symptoms indicating the presence of calculus may not have been mistaken or neglected. But suppose the discovery not to have been made until the labour shall have come on. Unless in that case something is done, the child's head will get crushed, or it perhaps might not be able to effect its passage through the pelvis at all. In a case thus circumstanced, what is to be done? There are two or three methods to be thought of; one is to be preferred to another according as the labour may be more or less advanced. Some practitioners might perhaps be disposed to wait a little to see whether nature might be competent to expel the child notwithstanding the impediment. Such an expectation being disappointed, there are others who would not scruple to open the child's head; and the author can easily conceive of cases where such a practice would be the only justifiable procedure. But if we happened to know of the complication during an early part of the labour, we might be able perhaps to raise the stone up, so as to allow the head of the child to descend into the pelvis so far that room would be left for the calculus to fall again below it. It was proposed by Dr. Smellie, in order to ensure the success of this method, to pass a sound into the bladder, guided by two fingers introduced into the vagina, for the purpose of raising the stone above the head, and supporting it in that situation until the head should be low enough to prevent its falling into the way; and then all the difficulty would be surmounted. But let us suppose that all this mischief might not have been found out till the head of the child was already engaged in the pelvic cavity. In such a case, it would be right to pause to consider what further to do. The use of the forceps might suggest itself. It is indeed certain that with the forceps we might exert great force; but it is not less obvious that great force might produce great mischief. If we open the head, the pressure would of course be greatly lessened: but this advantage would be obtained at the expense of the child's life. But there is yet another mode of proceeding; and that is to make an incision from the vagina into the bladder, at that part where it is not covered by peritoneum. This is to be done by means of a curved bistouri, having an edge only to a short distance from the point. The cut should be made upon the stone; and of course it should be a clean cut, that it might heal the sooner.

Instead of discussing specially all the more important complications of diseased actions with pregnancy, the author will here proceed to close the present article with references to some anomalous and important cases already recorded. See a case of some interest, showing the great caution necessary to be observed on the subject of scarification of anasarcous labia pudendi in advanced gestation.

A woman of a relaxed habit of body became the subject of anasarca in the fourth month of her gestation. Dr. Smellie first saw her in her seventh month, when her legs and thighs were become œdematous, and the pudenda especially so much swelled that she could not walk. This swelling however subsided upon being punctured with a lancet. Tonic medicines were exhibited, which seemed to have the effect of improving her general health: but the swelling of her lower extremities still continued. When that of the labia returned, it was reduced as before by puncture. She went on to the end of the eighth month, when she was delivered of a small child that lived some weeks. She recovered tolerably well for the first twenty days; but her constitution was so much impaired that her body became puffed up with anasarca, which carried her off in six weeks. Smellie's Cases in Midwifery, vol. ii. coll. 10. no. 3. c. 3. p. 91. The following is a case which would seem to indicate the same precaution. "As soon as the labour came on, the labia were scarified to let out the contained water. The labour terminated happily in two hours afterwards: but the distention of the labia appearing inflammatory, M. Mauriceau predicted the patient's death; which accordingly happened in seven days afterwards. The patient was in a feverish state three or four days before her delivery. It continued after it, with tension of the belly, oppression of the breast, and diarrhœa, which supervened on the third day after delivery. The inflammation had advanced to the internal parts." Traité des Maladies des Femmes Grosses, etc. par Fr. Mauriceau, tom ii. obs. 84. p. 70. See a case of most extraordinary constitutional irritation during the latter five months of gestation, in which both the nervous and sanguiferous systems were implicated. Com. by M. Souquet, Journ. de Méd. Chirurg. etc. tom. xviii. p. 254. Cases of violent reachings and vomitings. "The patient was attacked in the second month of her first pregnancy with violent reachings and vomitings, for which some of her acquaintance persuaded her to take a vomit. She accordingly took five and twenty grains of ipecacuanha, which operated both upwards and downwards so powerfully that it threw her into convulsions and floodings. By proper treatment, however, she recovered. In about four months after this accident, the same woman became pregnant; and being attacked with sickness at her stomach and reachings in her second month, Dr. Smellie was requested to see her. Finding that she had exceeded her usual catamenial period, he ordered her to lose eight ounces of blood from the arm. The vomiting was immediately relieved. From this time forward, till about the middle of the fifth month, venesection was repeated every four weeks with the same success; and she happily went on to her full time. Smellie's Cases, vol. ii. coll. 10. no. 1 and 2. p. 83. The subject of the case next to be noticed was a great sufferer from nervous complaints, and was in the second month of her second pregnancy attacked with violent reachings, for which she underwent gentle evacuations, and took draughts with neutral salts without benefit. The complaint however abated in consequence of her going into the country, and

drinking ass's milk for three weeks. But when she returned to town, the vomiting also returned with greater violence; and the patient miscarried in her fourth month. Smellie's Cases, vol. ii. coll. 10. no. 1. p. 84. A case of violent vomitings, accompanied by a kind of convulsive movement in the second month of pregnancy. The patient was of a sanguineous disposition. She had sustained an abortion of a former pregnancy, and also a false conception in the year immediately preceding. She was now bled at the arm; and she went on to her full time, and was safely delivered. Mauriceau, tom. ii. obs. 24. p. 21. A case of death after a premature labour, complicated with small-pox. The patient was four months and a half advanced in her gestation; and she died in four days after her delivery. A case of violent vomiting in the ninth month of gestation, cured by twice bleeding from the arm, succeeded by opiates and soothing enemata. Mauriceau, tom. ii. obs. 374. p. 310. A case of pregnancy complicated with a violent erysipelas of the face and head, treated successfully by three bleedings from the arm on different days. Mauriceau, tom. ii. obs. 475. p. 393. A severe cough and spitting of blood during pregnancy, exasperated by frequent vomitings. The patient was nevertheless delivered of a living child at the full period of gestation. The reporter of the case attributes its happy result principally to two general bleedings which he had prescribed. Mauriceau, tom. ii. obs. 527. p. 436. A case of pregnancy, complicated with a difficulty of breathing of long duration, hæmoptöe, a quinsey, together with an accompanying fever of considerable intensity. Parturition supervened in the sixth month of gestation, and the patient died a few hours after her delivery. Malignant affections of the throat are alarming complications with pregnancy. Mauriceau, tom. ii. obs. 593. p. 488. The case of a woman who was happily delivered, although she had been afflicted with a violent fever for ten or twelve days before the accession of her labour. When the labour declared itself, the fever had been perfectly subdued. In the description of this case the reporter takes an opportunity of observing that it is very dangerous for a woman to be the subject of an active fever, when she is about to become puerperal. Idem, tom. ii. obs. 584. p. 471. Numerous cases are added, of fevers complicated with pregnancy and parturition, of which some terminated fatally and others in recovery: and of the latter cases, the prosperous result was ascribed in almost every case to repeated bleedings. Many of the primary fevers, such as remittents and intermittents supervening upon pregnancy, were treated generally very successfully by bleeding in the first instance, and afterwards by the use of bark in active doses. Many cases are also given by the same author of the liquor amnii escaping for many days, and even for two or three weeks before the accession of labour pains, and in several instances without appearing to have compromised the life of the fœtus. See especially vol. ii. obs. 688, a case in which repeated discharges of the waters had preceded the accession of labour for a period of two months, although the patient was afterwards delivered of a living child at the full period. The next is a case of pregnancy complicated with diseased liver and

great enlargement of that viscus. Madam J. was thirty-five years of age, of small stature, and was the subject of inflammatory affections from an early age, and subsequently to so great an enlargement of the abdomen, as to have the appearance of a woman at the full period of gestation. An opportunity was presented to her of contracting an advantageous marriage, and she consulted the present reporter of her case, as well as some other gentlemen of the faculty, as to the possibility in the first instance, and then as to the probability, of her being delivered safely of a living child, provided she should accept of the offer which was then about to be made to her. The answers were decidedly unfavourable to her wishes; which to a lady who had made up her mind before she ventured to ask advice, must of course have been very provoking. She however summoned courage enough to be married; and although the latter weeks of her gestation were harassed by many distressing symptoms, and her mind by the most anxious anticipations, she was nevertheless delivered at her full time of a healthy and well-grown child; and she recovered perfectly after an unusually short period of confinement. Journ. de Méd. etc. par M. Corvisart, tom. xxix. p. 354. A singular case of diarrhœa during pregnancy. A lady, the wife of a merchant, who was of a spare habit and bilious temperament, but of a remarkably placid disposition, was always seized immediately after conception with a diarrhœa, which returned with unfailing regularity every month, DURING THE WHOLE OF THE PREGNANCY, and was often accompanied on its return by violent pains of the stomach. The advent of this periodical diarrhœa was considered by the lady herself an indubitable sign of pregnancy. The symptom continued at each period for seven or eight days, and on each day she had from fourteen to five-and-twenty copious alvine discharges. Although she took but little food, she nevertheless enjoyed a moderately good state of health and spirits. When the case was reported, she was the mother of three healthy children. In her first pregnancy medicines were exhibited with the intention of stopping the looseness; but they produced such unfavourable symptoms that they were soon put a stop to. In the absence of pregnancy, the catamenia in the case of this lady flowed regularly, healthily, and plentifully; whilst during the first week after conception and till the accession of the diarrhœa, a copious fluor albus was discharged; which then became arrested and did not return. Com. by Dr. Peter Romellius, Ephemerid. Germ. dec. ii. an. 5. p. 303. A case of supposed menstruation during pregnancy, although that function had not presented itself before conception. Notwithstanding the anomaly in question seems to have occasioned no serious detriment to the patient, it nevertheless furnishes an example of a disease of two functions, of which a brief notice cannot well be omitted in this place. A young lady of an irritable and delicate habit was attacked a short time after her marriage with frequent reachings and sickness, particularly in the morning. She loathed her food, lost her appetite, was often drowsy, and was sometimes seized with vertiginous sensations. She had also pain and more than ordinary fulness of her bosom. These complaints

were considered by her friends as sure indications of pregnancy; but their opinion was not a little staggered by the appearance of menstruation, a circumstance which had never before attended her. This discharge presented itself consecutively on the 1st of March, on the 27th of the same month, and a third time on the 24th of April. In this state of her case she took the opinion of the gentleman to whom I am obliged for this information; who on feeling the os tincæ at the brim of the pelvis, and the womb as he described it rather poising on the end of his finger, felt himself authorized to pronounce her in a state of pregnancy: finding her of relaxed habit, he prescribed tonics to brace her nerves, forbade her drinking much tea to which she had been too partial, advised a loose system of dress, the greatest ease of body, and a nourishing balsamic diet. At the next monthly period the menses flowed again, but now the uterus began to rise above the symphysis of the pubes, and the motion of the fœtus was so distinctly felt that no doubt was left as to the nature of the case. She continued to menstruate to the full end of her term; when after an easy natural labour of a few hours' duration she was delivered of a small child much healthier and stronger than could have been expected. But what was very extraordinary, she never afterwards either conceived or menstruated, although she enjoyed a tolerable share of good health. Perfect's Cases in Midwifery, vol. ii. case 80, p. 71. M. Baudelocque asserts that he had met with several women who assured him that they had not had their menses periodically excepting during their pregnancies. Their testimonies appeared to him to deserve more credit, because they only applied to him for an explanation of this extraordinary phenomenon. Heath's Translation, vol. i. p. 230.

Madame N., the wife of a builder, aged twenty-four, and married eight years, had never menstruated excepting when she was pregnant; and when the flux appeared, it was known for a certainty that she had conceived. The subject of this case eventually died of dropsy. Com. by G. C. Wincler. Ephem. German. an. iii. p. 555. A case of the entire absence of the catamenia during marriage. The subject of this case was twenty-seven years of age, and before her marriage had menstruated like other women: but having entered into the state of matrimony, although she became the mother of several children, she never once afterwards was a subject of the catamenial function. Com. by Dr. John Martin. Ephem. German. dec. ii. an. 4. p. 249. A young woman was married at the age of twenty-one, up to which period she had never menstruated, although her health had been good. After the lapse of about two years subsequently to her marriage, she appeared to lose her health, and in the month of February was seized with sickness and vomiting, and on the following day she sustained a discharge of blood from the uterus, and it continued to flow for four days. In the following month it appeared again; and at the same time the abdomen increased in size. The subject of the case conjectured that she was pregnant, and the evacuation continued to make its appearance monthly. At the full period of gestation she brought forth a healthy child. The lochia followed; but the

menses no longer returned. This notice was written six months after the delivery. Comment. Bononiensi, Instit. Scient. 1748. vol. i. p. 152.

Of cases of Pregnancy complicated with Prolapsion of the Vagina and Procidentia of the Uterus.—A woman thirty-two years of age, pregnant with her fourth child, was attacked at the full period of gestation with pains similar to those of labour. Her midwife intimated to her that her delivery was near at hand. Nevertheless three days elapsed, and still no delivery took place. On a sudden, however, a prodigious exertion of the parturient power was made; and in a moment the whole gravid uterus with its contents presented itself bodily on the outside of the vulva. A consultation of physicians and surgeons was forthwith summoned; many questions were put to the patient and the midwife, but no sufficient explanation of so singular a case could be obtained. The midwife stated that the patient had had strong pains for the entire period of three days; that during the latter part of the time they had indeed been exceedingly tempestuous; and that the intervals between them had rarely exceeded a quarter of an hour. She further stated that during the force of the pains the neck as well as the parietes of the uterus remained as flaccid as during the intervals between the pains; but that the womb sank more and more towards the inferior aperture, as it seemed to obey the impulse of each contraction. The uterus was in a state of inflammation. Its orifice was scarcely sufficiently dilated to admit of the introduction of the finger. The fœtus, whose epidermis peeled off upon friction, appeared to have been dead about twenty-four or thirty hours. The placenta was attached to the posterior surface of the uterus, and seemed to have participated in its general inflammation. The woman died four hours after the accident. Communicated by M. Garin, a surgeon of Tournay, etc. Corvisart's Journal, tom. iv. p. 264.

"The patient was a middle-aged woman, and gone about ten weeks with child, when she was attacked with a prolapsus uteri. The uterus was pushed entirely out of the vagina, and presented at its external orifice, of the size of a man's fist. This accident was occasioned by a fit of coughing. After reduction had been effected, a round middle-sized pessary was passed up along the back part of the vagina, and there kept until it was forced out by regular labour pains. The child was delivered, but was of small size. The mother for some days subsequently experienced some difficulty in emptying the contents of the bladder; but even of that complaint she soon got better." Smellie's Cases, vol. iii. collect. 44, c. 2, p. 342.

There is recorded in the Medical Museum the case of a woman, who was the subject of a prolapsion of the womb for a year and nine months; but who while afflicted with that complaint nevertheless conceived. In the progress of the gestation the os tincæ and neck of the womb protruded out of the vagina, and was of large size, and much inflamed. Some ulcerations presented themselves about the orifice of the uterus, which discharged purulent matter. The treat-

ment consisted in bleeding, in the use of emollient fomentations, and in attempts to reduce the protruded viscus. The latter object could not, however, be accomplished without violence. But it would seem remarkable that what was thus in vain attempted to be effected by art took place spontaneously when the pains of labour supervened. The os tincæ had the appearance and feel of a harsh indurated tissue, an effect no doubt of its long exposure to the air, and of the more or less constant vascular fulness and tendency to inflammation which had attended it. The amount of development of its orifice scarcely exceeded the diameter of a crown piece after twelve hours of labour pains. At length, however, the membranes were ruptured, and the child's head came out enveloped by the parts which had before prolapsed. The body was forced out with some difficulty by reason of a violently contracting and restrictive force which was opposed to it by the rigidity of the uterine orifice. Medical Museum, vol. i. no. 32, p. 227.

A female, in the beginning of her sixth month of gestation, being seized with pains similar to those of labour, sent for her midwife, who encouraged her to make the best of her opportunity by making strong bearing-down efforts. These produced a descent of the uterus towards the outlet of the pelvis, and an inversion of the vagina in the form of a considerable tumour, which appeared without the pudenda. After the use of fomentations, and subsequently of astringent lotions, the tumour was reduced, and the gestation proceeded and attained to its full period. Another case is mentioned by the same writer of an inversion of the interior tunic of the vagina during pregnancy. The subject was a female domestic, who had had a child at a former period. On lifting a heavy weight she became suddenly the subject of prolapsion and inversion of the vagina, attended by much inflammation and swelling. It is stated to have been successfully treated by the use of anodynes and astringents. Communicated by Dr. Maurice Hoffman. Ephem. Germanic. dec. ii. an. 10, p. 356.

In the third volume of Haller's Chirurgical Disputations, there is an interesting case of procidentia of the uterus, which was treated by delivery before any attempt was made to effect its reduction. The intention of the entire paper would seem to have been, to prove that delivery is much more easily accomplished in the prolapsed state of the uterus than after its reduction. This point is illustrated by the case of a woman, aged thirty years, whose uterus was in a state of procidentia for two months, after which she was successfully delivered. The uterus was then reduced, and subsequently retained in its proper situation by the use of a well-adapted pessary. See a Dissertation on the subject by Ph. Conrad. Fabricius. Halleri Disput. Chirurg. vol. iii. p. 431. Venet. 1755.

The following is moreover a case of procidentia of the gravid uterus treated by artificial delivery. The uterus had fallen without the os externum in consequence of an unusual pain of the abdomen, occasioned by drinking a large quantity of cold water. Not being able to reduce it, fomentations were diligently employed. Parturient pains supervening, and the membranes remaining

unbroken, the hand was introduced into the womb, and the child was turned and brought out happily by the feet, so that both the mother and the child were saved. The child, however, died soon after. The secundines adhered, but were subsequently extracted. Fomentations were again applied, and the uterus was reduced. All went on well subsequently to that result, and the woman perfectly recovered. Comment. de Reb. in Scient. etc. vol. xviii. p. 480.

A married woman, who had often been the subject of a prolapsus uteri during gestation, experienced a repetition of the same inconvenience in consequence of bearing down too strongly during her subsequent labour. The protruded uterus was about the size of a man's head. The midwife, not knowing how to act, requested the assistance of two professional gentlemen, who, in their turn, forthwith summoned a more extended consultation. The result was that delivery was effected by section of the orifice and part of the neck of the uterus. A sound but dead child was extracted. After fomenting with proper applications, the prolapsed uterus was then reduced, and subsequently maintained in its proper situation by a pessary. Com. by Dr. Geo. A. Merclini. Ephem. Germ. dec. ii. an. 3, p. 375.

An interesting case of procidentia of the womb during parturition, and its reduction after the birth of the child, is recorded by Saviard in his Surgery. See the Translation of Saviard's Surgery by J. S. p. 35.

Two cases of the same description are quoted by Sabatier in his Memoir on Displacements of the Uterus and Vagina. Mémoires de l'Academie Roy. de Chirurg. tom. iii. p. 361.

See finally a case of inversion of the vagina with procidentia of the gravid uterus during labour, reported by Hünerwolff. "The orifice of the uterus being partially dilated, the patient herself dilated it still more, the midwife assisting her; and the birth of the child was effected in this situation of the womb, to use the language of the reporter, without a painful effort. The uterus, after being washed and fomented with herbaceous decoctions and infusions, was happily replaced, and was retained in its situation without the use of a pessary." Ephem. Germ. dec. iii. p. 188.

Of cases of Pregnancy complicated with Small-pox.—These cases are generally full of danger, although, as some of the following cases prove, a patient may occasionally be expected to recover. A lady, who was in the fifth month of her pregnancy, became the subject of confluent small-pox, from which she recovered, and afterwards proceeded to the full period of her gestation. No marks of the distemper appeared on the child, which had not been dead many days before the mother's delivery. The head however was dropsical, and could not be expelled by the pains until the water was discharged by perforation of the presenting part.

The following case of this dangerous complication was communicated to Dr. Smellie by Mr. Cook, a practitioner in Shropshire. A gentlewoman at

Oswestry, aged twenty-eight, was in the seventh month of her pregnancy seized with confluent small-pox, accompanied by petechiæ, of which she recovered. In two months afterwards she was delivered of a dead child, upon whose body there were pustules which had the appearance of being at their crisis. Smellie's Cases in Midwifery, coll. 18, no. 7, cases 1 and 2.

A woman was delivered of a dead child at six months gestation. She had been the subject of small-pox about two months before the accession of her labour. After that time she had quite recovered; but on the child there were to be seen twenty distinct pustules. Mauriceau, tom. ii. obs. 600, p. 493. The same author records several cases complicated with small-pox, at early periods of gestation, which eventually did well, both in respect to the mothers and their offspring. Tom. ii. obs. 23, p. 15; obs. 121, p. 64; obs. 558, p. 447.

Mary Gatton, of Prince's street, Westminster, was attacked with the small-pox. She was then in the seventh month of her pregnancy. The disease proved to be of the confluent kind, and was attended by a considerable fever. About eighteen days from the first attack of the eruptive fever, she was taken in labour, and delivered of a child, which had the appearance of having been dead five or six days. Its body was covered over with confluent small-pox. The pustules were white, and full of matter; and from their size seemed to have nearly attained their maturity. Com. by Dr. Bland, physician to the Westminster Gen. Dispensary. Simmons's Medic. Journ. vol. ii. p. 204.

The same fact is illustrated by a case of which the facts were communicated in a letter by Dr. William Wright, of Jamaica, to the late Mr. John Hunter. The history was that of a Negress, who was the subject of small-pox during gestation. The pustules were few, distinct, and large; and she went through the disease with very little trouble till, on the fourteenth day from the eruption, she was attacked by a fever; which, however, lasted only a few hours. But she was on the same day taken in labour, and delivered of a female child, with the small-pox on her whole body, head, and extremities. They were distinct, and very large, such as they commonly appear on the eighth or ninth day in favourable cases. The infant died on the third day after its birth; but the mother recovered. Transactions of the Royal Society of London, vol. lxxi. 1781.

Cases of small-pox during pregnancy, by Mr. Benjamin Roberts, surgeon, at Salisbury. Mary Hicks, near the ninth month of her pregnancy, was inoculated on the 14th of November 1783. Her arm inflamed, and every appearance promised the most favourable termination to the disease. On the 21st the eruptive fever commenced; and the pustules, which were not very numerous, came out on the third day. When these began to dry, she had one violent rigor, followed by other symptoms which denoted the death of the child. Being constipated, an opening medicine was exhibited; by means of which, together with some diaphoretics, she was much relieved. On the 28th she fell into

labour, and on the 29th she was delivered of a dead child. The body of the child was covered with small-pox pustules, the bases of which were in a gangrenous state. Case 2. Elizabeth Boon, in the eighth month of her pregnancy, was inoculated on the 15th of November 1784. On the 20th the eruption appeared, and the fever did not abate. Six ounces of blood were taken away, and a saline mixture was exhibited. On the 27th her pains came on; and she was, in a few hours, delivered of a living child. There was not the least trace of eruption on any part of the body of the child, which died in about ten days, of a complaint in its bowels. The inoculation of one Mary Jeffrey, in the eighth month of her gestation, is given by the same writer. The patient had the disease regularly, and very favourably, and was delivered in three weeks afterwards of a living child, without any appearance of the small-pox upon it. "I was induced," observes Mr. Roberts, "to inoculate these patients by their own earnest desire, and because it was scarcely possible for them to escape the natural infection; the disease being at that time spread through almost every family in Wilton, the place where they resided." Simmons's Med. Journal, vol. v. p. 400.

We have next remarks and cases on the subject of inoculation of pregnant women and of infants at the breast, by Dr. George Baker. "A healthy young woman was inoculated in the sixth month of her pregnancy. The pustules appeared at the usual time, and in moderate numbers; and nothing untoward happened until the evening of the fourth day from the eruption. She was then seized with symptoms of premature labour; and a sudden and violent labour following, she soon died convulsed." The assertion of Dr. Mead, that if there be no miscarriage, the child will be free from the disease during his whole life, unless it happen to be born before the pustules are come to maturity, is refuted by the following fact. Two women, being pregnant, were inoculated; and had the small-pox very favourably, and afterwards brought forth their children in perfect health, and at the usual time. Both these children, after they had attained the age of three years, were inoculated with effect, and had a moderate eruption. Transact. of Coll. of Physicians, vol. ii. p. 275. See in the same volume of the Transactions a paper containing an account of the success of inoculation in Jamaica, by Mr. John Quier, a practitioner of medicine in that island. In illustration of the principle that pregnancy was no obstacle to inoculation for the small-pox, we have the following cases. "A woman with child, who had been salivated since the commencement of her pregnancy, was brought to me, with others, to be inoculated. As is often the case, she knew not how far her pregnancy was advanced; but from the size of the abdomen, which was but small, I conjectured that she was not farther gone than the seventh month. On the day after the incision was made, she was brought to bed of a mature child. She suffered not the least from childbirth, and had only a very small number of pustules. This case only proves, that if a woman shall have been delivered of a child, and shall have proceeded for several days in her

convalescence, before inoculation for the small-pox can be expected to produce any constitutional effect, she may not sustain any fatal, or even serious injury, from that process. But mark the consequence as to its influence on the child: "The child was inoculated on the eighth day of its age; and a very confluent kind of small-pox succeeded, of which it died." "Another woman was inoculated, together with her child, about five weeks after her lying in. The mother having very little milk in her breasts, and another nurse not being to be procured, I was apprehensive of the inefficacy of the preparation of the child, and ventured to give it half a grain of calomel twice. The disease was nevertheless extremely confluent, and it died. The mother had the disease very favourably." Medic. Transact. of the Roy. Coll. of Physicians, vol. ii. p. 366.

The following case is quoted as an exception to the truth of one of the aphorisms of Hippocrates, that pregnant women, if attacked by acute diseases, have to suffer death. Hippocrat. lib. v. aphor. 31. A good-looking woman, aged twenty-two, became the subject of small-pox, which however disturbed her health but very inconsiderably. The pustules presented themselves sparingly, and occasioned but little inconvenience; and as the patient possessed an excellent constitution, and no urgent symptom manifested itself, few medicines were exhibited. Three months after her recovery she was safely delivered of a child half putrid, and infected with the small-pox. Ephem. Germ. dec. ii. an. 9, p. 178.

We have next to notice a case of small-pox during pregnancy, which was supposed to have destroyed the child in utero. The mother, however, recovered; and, after the lapse of some weeks was delivered of a dead child, covered with the pustules of small-pox. Jones's Abridgment of the Ph. Trans. vol. v. p. 313. Then the case of a woman who bore a child that was visibly at its birth the subject of small-pox, in consequence of the mother having seen a woman who was suffering from that disease. Com. by Cromwell Mortimer, Phil. Transact. vol. xlvi. p. 233. See also some Accounts of the Fœtus in Utero being differently affected by Small-pox, by W. Watson. The essayist proves by cases, that a child born with marks of the small-pox will not take it again; that is, the child may take the disease in utero, without the mother being affected by it, if the latter exposes herself to the infection; and that, although the mother may be affected with it while pregnant, the child either may or may not take it. Phil. Transact. vol. xlvi. p. 235. Mrs. F. was seized with pyrexial symptoms on the 5th of December. The small-pox made its appearance on the 8th. It gradually matured and went off, so that on the 27th the patient was quite well. On the 31st labour came on, and she was delivered of a child with the marks of the small-pox upon it, as if appearing about the seventh day of the eruption. Com. by the late Mr. John Hunter, Phil. Transact. vol. lxx. p. 128. A lady was attacked by the small-pox in the eighth month of her pregnancy. On the eleventh day of the malady she was delivered of a child, which exhibited no marks of the

disease upon it, but which, by reason of its premature birth, died in half an hour; and the mother died shortly after. Th. Barth. Act. Medic. vol. v. p. 176. The reader is especially recommended to peruse, on this subject, an excellent paper by the late Dr. George Pearson, on the effects of variolous infection on pregnant women. It occupies about forty-four pages octavo, and contains several good cases, and a great deal of interesting matter. Medic. Comment. for 1794, dec. ii. vol. ix. p. 213. An interesting case of small-pox during a twin pregnancy. The patient, after having been in great danger, eventually recovered. Some time after her recovery, but at a time something short of the full period of gestation, she was taken in labour, and delivered of twins. The remarkable feature, however, in this case is, that one of the children had the marks of the small-pox upon its body, and was still-born, having probably died at the period of its mother's greatest danger; and that the other was born alive, without any traces of having been subject in utero to the variolous disease. Journ. de Méd. Chirurg. etc. tom. x. p. 403.

Measles during pregnancy is attended with great danger to the mother, and therefore secondarily to the child. But the author knows not of one instance of that disease having been communicated by an infected mother to her child in utero. The same remark is equally applicable to scarlet fever and other constitutional diseases, founded on eruptive affections of the skin.

Cases of Pregnancy complicated with the Venereal Disease.—The patient was thirty years of age. She was the subject of treatment for the disease, in the second month of her fourth pregnancy. In the fifth month, when she was last seen by M. Mauriceau, she is reported to have been doing well. Mauriceau, tom. ii. obs. 100, p. 83. 2. The patient was twenty-two years of age. In the seventh month of her pregnancy she was cured of the venereal disease. At the full period of gestation she was happily delivered of a living child that was not infected with the disease. Idem, tom. ii. obs. 23, p. 20. 3. A case of gonorrhea during pregnancy. In the middle of the third month the patient was troubled with a virulent gonorrhea, which had come on after the ulceration of a venereal bubo. She was safely delivered, at the full time, of a living child, which had not been infected. Idem, obs. 123, p. 100. 4. Case of a young woman who was cured of the venereal disease in the third month of her pregnancy, and was safely delivered at the full time, of a living child which had no mark of the infection. The disease was treated by moderate salivation. Idem, obs. 138, p. 110. 5. A case of gonorrhea during the whole time of gestation. The child presented in an inconvenient position of the head. The waters had gone off on the previous day, without pain. The child, however, was vigorous when born, and the placenta was in a sound state. Idem, obs. 178, p. 141. 6. Case of an ulcerated state of the orifice of the womb, a result of infection received from the husband subsequently to conception. The reporter expressed his apprehension that the disease might prove fatal to the mother, but

not to the child: but the event is not stated. Idem, obs. 557, p. 462. 7. A pregnant woman, cured of a lues venerea by the use of the solution of corrosive sublimate, by Dr. George Macauley. The subject of this case was a young married lady, of twenty-three years of age: she was covered from head to foot with venereal scabs. She was about five months advanced in her third pregnancy. The dose of the medicine was half a spoonful of a solution made with twenty grains of corrosive sublimate in one pint of French brandy, taken at bed-time. After four days she had the same quantity given to her night and morning; so that in four hours she took five-eighths of a grain of mercury. At the end of a fortnight the eruptions were almost gone. Some warts, which remained about the arms and perineum, were bathed with the same solution, diluted with about four times its quantity of warm water. In about ten days these excrescences disappeared. The patient, in the mean time, drank of a decoction of sarsaparilla: and in a month she was quite cured. She was delivered at seven months, of a child without any blemish upon it. In a few days, after the labour, however, the symptoms recurred, but were entirely subdued by the same means. The reporter of the above case speaks, in a postscript, of another patient, whom he treated in the same way, and with the same success. Medic. Observat. and Enquiries, vol. ii. p. 256. Consult some important remarks on this subject in Smellie's cases, vol. ii. collect. 2, no. 4, case 1, p. 154, edit. of 1754.

Cases of Pregnancy complicated with Hernial Protrusions of the Intestines.—1. A case of ventral hernia which manifested itself when the subject had gone five months in her pregnancy. It was treated by the application of adhesive plasters and a broad girdle with four buckles to it. This piece of mechanism answered every end of pressure; and the patient was delivered at the full period of gestation without accident. Since that time the same lady has borne two children; always observing to wear her bandage tighter when she was not with child, and to relax it in proportion to her increase of size when she was. Perfect's Cases in Midwifery, vol. ii. p. 38, case 73. 2. A case of exomphalos which proved fatal soon after delivery, in consequence of exposure of the surfaces implicated, to great and incessant irritation during the action of labour. The body was not inspected after death. In this case the patient could not bear the pressure of a girdle as in the preceding. Mr. Perfect ascribed her death to strangulation. Idem, vol. ii. p. 41. 3. A case of inguinal hernia during pregnancy. This intestinal protrusion had existed and was very manageable before pregnancy; but during gestation it became more and more troublesome, and was so tender that the patient was not able any longer to bear the pressure of a truss. The intestinal tumour came down below the labia pudendi. The parts were red and much inflamed; when labour declared itself, the tumour made great resistance to the touch, and on the accession of every fresh pain, it was described as being so full as to appear ready to burst.

The patient was hot and restless complained of great thirst, and had a very strong pulse. The pains were at first slight and transitory, but accompanied by a discharge of mucus from the vagina and os tincæ. As the patient was at the full period of gestation, there was no doubt of her symptoms being truly premonitory of labour. Venesection was practised to the amount of six ounces of blood, and followed up by the exhibition of saline draughts with moderate doses of the Thebaic tincture, and fomentations made with decoctions of demulcent herbs. The os tincæ dilated remarkably slowly. By precautions thus taken the rupture was rendered less troublesome; for although the pains had increased in force, no additional uneasiness was complained of as affecting the seat of the local affection, and the child was born by the unassisted efforts of nature. Almost immediately after the patient's delivery the tumour entirely subsided. During her convalescence she was again obliged to have recourse to a truss, which in her next, as in her preceding pregnancy, she was obliged for the same reason to lay aside. In her labour with her second child, the os tincæ dilated in a fourth part of the time which it had occupied in the first. The hernia was supported by the hand of an assistant during every pain, and no inconvenience whatever was sustained by the patient from this procedure. After her second labour she recovered much more satisfactorily than she had done after her first, and was able to go whole weeks together without the least use of her truss. Since her last confinement she has been so little subject to this complaint as to have no occasion to wear a truss at all. Idem, vol. ii. case 75, p. 44. 4. A case of ventral hernia complicated with pregnancy in a subject who was deformed as to some parts of her person, although her pelvis was not so small as to render the birth of a living child at the full period of gestation impossible. Idem, vol. ii. p. 47.

Cases of inguinal hernia during pregnancy are given by Smellie. One patient was troubled with this intestinal displacement from her infancy; but it disappeared in the fifth month of her pregnancy. As it presented when labour came on, an assistant was directed to apply pressure on the part during every pain; and with this trifling assistance the patient was safely delivered. The hernia never returned. Smellie's Cases, vol. ii. coll. 11, no. 2, c. 1, p. 142. edit. 1754. Case 2. A patient was much afflicted with a rupture in the left groin during the whole of her uterine gestation. Although she could reduce the hernia, it was forced down by every pain, and gave her great uneasiness. When the labour was pretty far advanced, an attempt was made upon the cessation of the pain to reduce it by pressure made upon the part with the fingers; the patient in the mean time being directed to lie on the left side, with her thigh retracted; a position which favoured the keeping up of the intestine, and prevented the anguish which accompanied and retarded the labour. The patient was thus safely delivered. When she recovered after her confinement she was recommended the use of a truss, by which her disorder was mitigated. Idem, p. 143. Dr. Smellie attended a patient who after a

former labour was afflicted with an exomphalos, which disappeared in the eighth month of uterine gestation, but returned after delivery. The same writer quotes a case of intestino-perineal hernia complicated with pregnancy. This hernia continued down during the whole time of the patient's first labour, upon which an inflammation and strangulation of the intestine ensued, so that it could not be reduced as usual. But as the patient had a large discharge of blood after her delivery, and the parts were fomented with discutient fomentations, followed up by the application of emollient cataplasms, the stricture was overcome and the hernia was reduced. In her subsequent labour, the intestine was forced down by the pains, which had also pushed down the membranes with the waters, so as to have produced a considerable development of the external orifice. The hernia was, however, reduced by opening still further the external orifice, introducing the hand into the vagina, and pushing the intestine above the os sacrum. By this operation the membranes were broken, the waters were discharged, and the head being thus forced down into the pelvis, had the effect of keeping up the intestine. The patient was therefore safely delivered without being subjected to the same risk that she had before incurred. Idem, case 5, p. 145. The immediately succeeding case is an example of the same displacement; but it is rendered especially interesting from the incident of its rupture during the obstetric management of a labour which it complicated. "Next morning," observes Dr. Smellie, "I accompanied Mr. Tomkins to the place, and found the patient in great agony. The part was livid, and all round the edge of the swelling of a fiery red colour. She lay on her side, and when she turned on her back for the convenience of examining the tumour, it broke in the middle where the skin was thin and where there was a small fluctuation underneath. From the opening which thus resulted, which was of small size, there issued about a spoonful of pus mixed with blood, which was quickly followed by the discharge of a thin fluid of a grayish colour to the quantity of about half a pint. This rupture no sooner happened than the patient exclaimed that the intestine had gone up, and that she was perfectly free from pain, which the moment before had been so violent. We were very much alarmed at what had happened; because this fluid, which still continued to flow in a small quantity, appeared to be a part of the contents of the ileum, some portion of which we concluded must be mortified. The patient being of a constipated habit, the colon was emptied by a glyster. A pledget was applied to the aperture, and for sustenance, soup made of lean mutton or beef was prescribed. The patient recovered contrary to our expectation, went on to full time, was delivered by Mr. Tomkins, and some months after her delivery called upon me, when I found the hernia had kept up and the part appeared firm, although a little ichor continued to ooze through the small orifice just mentioned; so that I imagined the inflamed intestine had adhered to the neighbouring viscera after the mortified slough had been cast off. She was frequently troubled with violent pains, and a sense of great weakness on that

side of the abdomen; as if the intestine had become narrow and contracted, so as to hinder the easy passage of the ingesta. In about five months after this cure the rupture re-appeared, in consequence of the patient overstraining herself at the wash-tub; she being pregnant at the time. It was several times reduced by one of my pupils, by whom she was likewise safely delivered. Smellie's Cases, vol. ii. coll. 11, no. 2, case 5, p. 145.

Of certain occasional or very rare Examples of Morbid Symptoms occurring during Pregnancy.—Under this head of subject should be recorded the complication of pregnancy with anomalous affections of the external senses. "The wife of a citizen," observes Paullini, "is subject to be seized with an entire loss of hearing about four or five days before she is taken with her labour pains, which however has gone off after her delivery." Append. ad Ephem. German. dec. ii. an. 6, p. 78.

The author has seen two cases of the advent of entire deafness during gestation. In the one case the abolition of the sense of hearing came on suddenly during one of the earlier months of gestation, and very gradually returned after delivery; whilst in the other it came on by imperceptible degrees in the seventh and eighth months of pregnancy, and it returned suddenly and with painful acuteness on the sixth day after delivery, when the lochia entirely ceased to flow.

"Mad. Pivert, forty years of age, became the subject, in the fifth month of her ninth pregnancy, suddenly, and without any known cause, of a deep-seated pain of the right eye. This did not manifest itself by any external sign. The patient experienced no heat in the organ. Examination could discover neither redness nor secretion of tears. There was however a sensation of strong pulsation at the bottom of the orbit, accompanied by acute and frequently repeated lancinating pains, by appearances of rapidly darting sparks before the eyes, and by errors of vision. Pain of the forehead and about the root of the nose, together with a sense of weight and oppression at those parts, aggravated the patient's distress. In a short time the rays of light ceased to irritate the retina; the eye became insensible to the contact of the finger; and the patient could intently stare at the sun without producing any painful excitement; which however retained its form and natural transparency. Inability to sleep accompanied this local affection for several weeks. A bleeding at the arm, which moderated the symptoms, was the only curative measure had recourse to. The delivery was happily accomplished. In the course of some days subsequently the lady found that she could perceive light with the eye which she considered as lost to her, and after some days subsequently she could clearly distinguish objects with it. In this state she remained, or rather than otherwise gradually improved upon it, for eighteen months, when she conceived of her tenth child.

About the fifth month of her pregnancy, as on the former occasion, she was again seized with similar pains, although much more intensely severe, of the same eye. They were moreover accompanied by a frontal cephalalgia, which

assumed a periodical character, commencing every day at five o'clock in the afternoon, and terminating about seven or eight by a profuse perspiration. There was an aggravation of the symptoms every other day. It was stated by the patient that the left eye had been gradually getting weaker, and that she saw with it only sufficiently to guide herself in walking, for some time before it began to suffer much pain; that she had used blisters applied to the nape of the neck and behind the ears, which she could not support on account of their frequently occasioning faintings, by the irritation which attended them, which also equally resulted from the use of ardent spirits. On examining the vision of this lady, it was very perceptible that the pupil of the right eye was more dilated than that of the left; that moreover it had no mobility; and that the eye itself was totally insensible to the contact of the finger: that the pupil of the left eye had already lost its natural form, and that ITS movements likewise were less perfect than natural. The head-aches already spoken of returned every evening, and terminated in profuse perspiration. The pulse during these paroxysms, instead of being rendered stronger and more accelerated, became actually slower and more concentrated. The patient was at this time in the sixth month of her pregnancy. The case, therefore, required that the plan of treatment should be such as might consist with the well-being of the fœtus. Accordingly emetics, by reason of their tendency to induce abortion, were rejected. The medical attendant thought it more advisable to depend upon local depletion by means of leeches applied to the eyelids and to the temples, and upon fumigations of gum-benjamin to the eyes, and a seton to the nape of the neck. The smoke was received into a funnel, and by it conducted to the eye which was to be submitted to its action. After a month of this treatment it recovered pretty fully its functions; but the right eye gave no indication of its possessing any sensibility whatever to the rays of light. It however yet remained very uncertain whether after delivery, as had taken place after the preceding pregnancy, it might not in some degree be restored. This hope was disappointed. The labour proved a natural one, but the right eye retained its then state of insensibility. Com. by Dr. Bezard. Journ. de Méd. etc. par Leroux, tom. xxxiii. p. 72.

Without recognising the case next to be noticed as a part of the nosology of pregnancy, it nevertheless claims to be placed among its rare anomalies. "The wife of a citizen of Ferraria, twenty-six years of age, of a bilious constitution, and the mother of three children, was attacked with PERIODICAL EPILEPSY whenever she conceived, and sustained a paroxysm of that malady once a fortnight during the whole of her gestation. But as soon as she was delivered the disease left her. Its occurrence therefore was always to her a sign that she had become pregnant." Com. by Lanzoni, Ephem. Germ. dec. ii. an. 10, p. 160

Some other unusual symptoms have been recognised as signs of pregnancy; such as the occasional or periodical occurrence of PROFUSE PERSPIRATIONS; IN SOME THE ACHING OF A PARTICULAR TOOTH OR TEETH, AND IN OTHERS THE

CESSATION OF A TOOTHACHE ENDURED AT OTHER TIMES; AND AGAIN, IN OTHERS THE LIABILITY TO BE TAKEN WITH PROFOUND SLEEP AT CERTAIN HOURS IN THE DAY, OR SOME OTHER MEASURED INTERVALS OF TIME. Ephem. Germ. dec. ii. obs. 126. Hist. by D. Hannemann, in Act. Med. Hafn. Barthoz. vol. iii. obs. 17; and by D. Vit. Riedlin. Obs. Medic. obs. 98.

The following case of a MONTHLY DIARRHŒA during pregnancy must seem intitled to be added to the above list. A young married lady, of spare habit and bilious constitution, was attacked immediately upon conception with a diarrhœa, which returned every month during the whole of her pregnancy, accompanied by violent pains of her stomach and bowels. This state of bowels continued during each period about seven or eight days, on each of which she usually had from fourteen to twenty-five alvine discharges. She took but little food, yet she was well and in good spirits. In her first pregnancy medicines were prescribed with a view to put a stop to this state of things; but they produced inconvenient and distressing symptoms, and were soon laid aside. When not pregnant this lady has always menstruated regularly, healthily, and plentifully; and on conception taking place, and until the expiration of the first month of pregnancy, when the diarrhœa comes on, a fluor albus is copiously discharged, which then stops, and does not afterwards return. The subject of this notice has had three children, all healthy and vigorous, under these apparently untoward circumstances. Com. by D. P. Romellius. Ephem. Germ. dec. ii. an. 5, obs. 149, p. 303.

OF DRIBBLING OF THE WATERS.—The escape in dribbling quantities of an aqueous fluid, similar to the liquor amnii, for many weeks or months before the accession of labour is, in most cases, a dangerous and often a fatal affection of the pregnant state.

Mauriceau, in describing the case of one of his patients, concludes with the statement that "she was delivered of a living child at the full period, although she had had a discharge of the waters for nearly two months before the accession of labour." Tom. ii. obs. 688, p. 561.

The same author quotes another case of a similar discharge which continued during the whole of the last month of gestation, and a third in which it was incessant during the last fortnight, and in both cases without being followed by any inconvenience either to mother or child. Tom. ii. obs. 85, p. 45; et obs. 117. p. 63.

Dr. D. B. Scharf, in a communication to the editors of the Nurimberg and Leipsic Miscellanies, gives an example of a similar accompaniment of pregnancy, and states that he had no hopes of a favourable termination to so untoward a gestation. He however was induced to prescribe certain medicines, which caused an abatement of the discharge, although it did not entirely cease till the full period of the pregnancy, when a fine healthy child was born. Ephem. Germau. dec. ii. an. 2, p. 250.

"A woman of eight-and-twenty years of age was seized in the fourth month

of her pregnancy with a discharge of very clear lymph from the vagina, so that she voided of this transparent fluid about two pounds daily. On the third day after the accession of this flux she was attacked with fever, in consequence of which it sustained an inconsiderable diminution of its quantity, but was not suppressed. The fever was repressed by bleeding and the use of cinchona bark. The flux of lymph however continued during the whole of her pregnancy; but during the latter months only in the quantity of about half a pound daily. About the eighth month the patient fell into a violent passion, which was followed by the accession of labour pains, and she was delivered of a healthy living child soon afterwards." Comment. de Reb. in Scient. Nat. et Med. vol. iii. p. 648. Lipsiæ, 1754.

"A gentlewoman of the age of thirty, on Tuesday, April 22, 1770, in the latter end of the sixth month of her fifth pregnancy, was suddenly seized with a great weight and oppression at the lower part of the abdomen; so that she was not able to walk up-stairs, but was under the necessity of being carried. The morning after this happened, I accidentally called upon her, and found the abdomen considerably larger than it ought to have been for the time. She was scarcely able to walk across the room. In the afternoon she had pains similar to those of labour, and parted with nearly a quart of water, which came from her all at once, and continued running from her for seven days successively, from the time of her rising in the morning till the time of her going to bed at night, so as to wet sixteen or seventeen double cloths every day: but it always ceased when she lay down either night or day. On Monday, April 29, the running of the water ceased, but her inability to walk still continued. On Tuesday, May 7, she had a relapse of her disorder; the circumstances of which were in every respect the same as before. May 9, she was able to walk a little by the help of a person to lean upon. In this state she continued parting with water in the manner above related, at intervals of three or four days; and it generally ran from her for the space of one day, excepting during that part of it when she lay down upon the bed, till the 30th of June. After this time the water ran from her every morning as soon as she got out of bed; and continued as before all the day, excepting the time she lay down, as before, till within five days of her delivery; which happened on the 15th of July. In the evening of July 4, I was sent for again; she appearing to the persons who attended her to be in strong labour. I found her seemingly in extreme pain. The os uteri was open to the size of a shilling or more, and the edges of it were very soft and thin. Her pain pressed down the child against my fingers, and the membranes were plainly to be felt before the child's head, but I could not perceive that they were in the least protruded. In about two hours the pain entirely left her, and she was as well as usual. I was sent for again the following evening, and found her exactly in the same situation, excepting that her pains were something stronger. She was seized both nights at the same time, and continued in pain about two hours. After this I was requested to take my bed every night at her house, which was

at the distance of six miles from me. She kept continually parting with water as usual every day, during the time she was out of bed till July the 9th, when it stopped again, and ceased for the space of five days, during which time her abdomen swelled to as large a size as I ever remembered to have seen one swelled in an ascites. In the morning of July 14 she was again taken ill, and parted with a greater quantity of water that day than she had ever done before. She began to have slow lingering pains about ten o'clock that night, which gradually increased till about three in the morning, when I was called up. I found the os uteri much dilated, THE WATERS COLLECTING, and the membranes pushing strongly down. Her pains were very regular and strong; the membranes came to the os externum before they broke; and after two more pains she was delivered of a large healthy child about five o'clock in the morning. The lady recovered extremely well.

Since the occasion now cited, the same lady has had three children. The circumstances of her pregnancy with each were exactly similar with those of the one related, except in the following particulars. In the second, the waters began to come from her sooner than in the first, and her inability to walk was full as bad. In the third the water began to be discharged eight weeks sooner than in the first, i. e. in the fourth month of her pregnancy; but she had longer intermissions, it seldom returning oftener than once in a fortnight, and continuing but one day. In the interval also she was as capable of walking or riding as any person in her condition usually is. In the last the circumstances were exactly similar to those of the second. All the children were large and healthy, and the mother always recovered well. I boiled some of the water every time, to try if it would coagulate, but it always evaporated to dryness." Com. by Dr. John Alexander, of Halifax, Yorkshire. Duncan's Medic. Comment. vol. iii. p. 187.

It seems probable that, in many of the above cases, of what has been technically called DRIBBLING OF THE WATERS, the membranes of the ovum may have been their source. We know that it is a peculiar function of the amnion to secrete the fluid which takes its name from it. Whether the chorion may also not sometimes take upon itself the same office, the author knows of no sufficient evidence to enable him to decide the fact. But if we do not assume it, we shall find it very difficult to account for such profuse discharges of colourless fluids as have sometimes been reported to have occurred during pregnancy, and where afterwards it has been proved, as in Dr. Alexander's case, that the amnion has sustained no solution of continuity. Analogy would lead us to suspect the existence of what might be called a dropsy of the chorion; it now being well known that the amnion is liable to become the agent of a morbid discharge, which has already received the designation of dropsy of the amnion.

OF DROPSY OF THE AMNION.—It has been an accepted doctrine, for many years, that the uterus sometimes becomes the reservoir of prodigious quantities

of an aqueous fluid during pregnancy. Madame N., aged orty, received a sudden fright, in consequence of which she sustained a loss of blood from the uterus. In a short time afterwards she felt that a tumour had formed in the inferior part of the abdomen. She felt moreover a pendulousness of the uterus, which she attributed to a new conception; and her abdomen acquired a considerable volume. M. Desmarais was first consulted when she supposed herself in the fifth month of her gestation; although she was then as large as a woman at the full period of gestation. M. Desmarais could not distinctly feel the fundus of the uterus. The use of remedies was attended with little or no advantage: the case being suspected to be one of ascites, the operation of paracentesis was performed. Four pounds of a limpid water was withdrawn in the first instance, and by a little further management of the operation, a GREAT QUANTITY more of the same fluid escaped, accompanied by more than the usual quantity of blood. The patient became so weak that it was found necessary to withdraw the canula without delay, although the size of the abdomen was not reduced more than one-third: the patient was however sensibly relieved by the operation. In about fifteen days she had regained her former size: but for reasons given in the pathological history of the case the operation was not repeated. On the twenty-first day after the puncture, labour pains came on; the membranes were ruptured; the waters were discharged in great abundance, and the woman was delivered of a child no larger than one of five months' gestation. In a few minutes afterwards a second bag of membranes presented, and a second child was born no larger than the first; and the waters which followed, added to those already discharged, amounted to about forty pounds. Desmarais was of opinion, that all the waters represented as productive of the extraordinary size of the patient in this case were certainly contained in the uterus; and that the puncture which he made into the abdomen had reached into the cavity of the uterus. Com. by M. Desmarais, Recueil Periodique de la Société de Santé, tom. vi. p. 357.

Another case of dropsy of the amnion, to which was given, as was the practice at the period of its date, the designation of dropsy of the uterus, is found described, only with much unnecessary amplification, as follows:—

Jane P., twenty-eight years of age, in the fourth month of her pregnancy, fell violently, and received a severe stroke upon the epigastrium, in an attempt to jump over a ditch. On the day following, severe pains were felt in the abdomen, and a large ecchymosis appeared at the part bruised. Eight leeches were applied to it. In the course of six weeks the abdomen swelled excessively, and the patient became ill, lost her appetite, and failed in her digestion. At about the sixth month of her gestation, the dropsy fully manifested itself, and the pregnancy was doubted: but in a very short time from this period the patient became the subject of severe pains in the loins and abdomen, accompanied by a sense of great weakness, frequent vomitings, difficult micturition, intense fever, acute pain in the right thigh, and total

vigilance. M. Davilliers was consulted at this period of the case, and found the abdomen distended with an immense quantity of fluid, which he further discovered was contained within the cavity of the uterus. There was moreover at the time a little dilatation of the orifice of the womb; and the labour commencing, he could distinctly recognise the head of the child as the presenting part. The pains were yet however inconsiderable. On the following day, the 18th of October, the patient's situation was somewhat improved: on the 22nd, the orifice of the uterus was more dilated: on the 23rd, M. Davilliers punctured the membranes, WHICH WERE VERY THICK. Immediately the chamber was inundated with water: large pans and other vessels were filled with it; "and the greatest ascites dropsy," the writer observes, "could not have produced a more abundant quantity." The child presented by the head; the practitioner searched for the feet, and felt another fœtus. Com. by M. Davilliers. Journ. Gén. de Méd. etc., tom. lxii. p. 252. See a case, probably of the same disease, in the Ephem. Germ. dec. ii. an. 3, p. 527.

Professor Scarpa published, in one of his own country's journals, a case of dropsy of the amnion, under the designation however of a case of ascites complicated WITH DROPSY OF THE UTERUS, in a pregnant woman. In order to prove the co-existence of these different forms of dropsy in the same subject, the learned professor reports the case of a woman of thirty years of age, who was pregnant of her fifth child, who became the subject of the complication in question in the year 1806. Professor Scarpa, entertaining no doubt as to the nature of the malady, soon came to the decision of making a puncture into the abdominal cavity; a decision which he was urged to by the extreme sufferings of the patient, who, he represents, was actually on the point of being suffocated. Having most distinctly felt a fluctuation between the curved boundary of the false ribs and the left hypochondrium, he plunged his trocar intermediately between the upper end, externally, of the rectus muscle, and the edged terminations of the false ribs of the same side. From twenty-five to thirty pints of a serous-looking fluid escaped, to the great relief of the patient, who slept soon afterwards, and subsequently voided a great quantity of urine. On the next day she perspired very freely; and, after the lapse of two days more, she was surprised by the pains of labour. In the course of her parturient struggles she voided fifteen pounds of fluid from the uterus; after which she was delivered of twins, both of whom died when about six months old. In about a fortnight the patient herself was able to resume her ordinary occupations. Journ. Complément. du Dict. des Sc. Médicales, tom. i. p. 91.

Some years subsequently to the date of the above case, M. Mercier published his excellent papers ON THE DROPSY OF THE AMNION, in the Journ. Gén. de Médecine, tom. xliii. p. 165, and tom. xlv. p. 256; in which the history of a particular case of the disease is admirably described, and its patho-

logical character, as consisting in acute inflammation of the amnion, is beyond all doubt established. Several cases of dropsy of the amnion have occurred, and have been recognised as such, subsequently to the date of M. Mercier's papers. The author has seen two cases of it within the last few years; one in consultation with Mr. Langstaff, which was soon afterwards published in the Transactions of the Medico-Chirurgical Society by that gentleman; and the other in the practice of the Maternity charity. The former was treated by abdominal paracentesis, which speedily proved inductive of labour; and the patient recovered from the immediate effects of her confinement; whilst the other was treated by the operation for the induction of premature labour in the first instance; of which the result proved in every respect successful, excepting that the child, a poor meagre child, of about seven months' growth, was still-born.

The following case, by Duclos, may be perused with advantage, as further illustrative of the pathological history of this disease. "A lady, aged twenty-five years, of weak and lymphatic constitution, was seized, in the seventh month of her sixth pregnancy, with dry and frequent cough, which disturbed her at night. To the cough were added fever, intense thirst, dry skin, scanty and lacteritious urine, œdema of the lower extremities, loss of colour, and sleeplessness. Soon afterwards the abdomen became hard, tense, painful, and much enlarged; and the respiration at the same time so tight and laborious, that the patient could no longer rest in the horizontal posture. Hiccough, palpitations, vomitings almost incessant, rending pains in the loins, cessation of the motions of the fœtus, anxiety, faintings, and aphonia, ensued. On examination, in this deplorable state, Dr. Duclos recognised an excessive distention, with more than ordinary elevation, of the uterus. This organ seemed to occupy the whole of the abdominal cavity. Its orifice was directed backwards, and towards the base of the sacrum; and the fluctuation of a fluid within its cavity was abundantly perceptible. A consultation was instantly summoned. The pulse was then small and weak; the face was shrunk and dejected; the respiration short and hurried; and suffocation seemed actually impending on hazarding any change of position. The nature and peril of the case were unanimously agreed on by the consultants; and premature delivery, while acknowledged to be full of danger, was indicated as the surest resource. Yet some diversity of opinion, as to the best means of inducing labour, existed. How, in fact, it was inquired, was the dilatation of the uterine orifice to be effected, in its present high and unfavourable situation? Extraordinary efforts, such as might prove fatal to the patient in her exhausted state, would be evidently requisite for this purpose. Hence the attempt was considered as highly objectionable by Dr. Duclos until labour should commence; an event which the extreme distention of the uterus would probably soon determine. The consultation was therefore adjourned till next morning. On the subsequent day, the question of artificial delivery was again discussed; and it was decided to wait till the os uteri should evince a tendency to dilatation. The

patient now received the sacrament, and soon afterwards sank into a state of syncope; on recovery from which, incipient dilatation of the uterine orifice was perceptible. On striking the abdomen, fluctuation could be easily distinguished throughout its whole extent. Observing a return of the suffocation, Dr. Duclos determined on immediately rupturing the membranes, and evacuating the liquor amnii, at four several times, with an interval of fifteen minutes between each. With his finger introduced into the os uteri he regulated the evacuation; while the process was seconded by the pressure of a napkin encircling the abdomen. In this manner fourteen pounds of fluid were discharged, independently of what escaped without being received into a basin. The vomiting immediately ceased, and the respiration was relieved. During five hours of subsequent repose the strength was recruited by frequent administration of light broth, with the addition of small quantities of wine. The cough and palpitations had greatly subsided; but as the uterus seemed no longer capable of making an effort, the termination of the delivery was resolved upon. The uterine orifice, thin and unresisting, was readily dilated, and a small child was extracted, with the assistance of the forceps. The child, a female, although living, was puny and feeble, with very slender limbs. From the calculation of the mother, it had nearly attained its seventh month of uterine growth. Immediately after delivery, the bandage round the patient's abdomen was somewhat tightened; and an attempt was made to excite the action of the uterus by external frictions, and by titilations applied to the orifice of that organ, aided by an occasional exhibition of thin soup, together with some wine. Compresses, moistened with brandy, were applied to the abdomen; and a few hours of refreshing sleep sufficient to dissipate completely the hiccough and the palpitations were enjoyed. The lochia were very abundant, but almost serous. The flow of urine on the following day was copious, if not profuse. On the third day after the delivery, the œdema of the extremities had considerably diminished, and the secretion of milk had duly taken place. In ten days afterwards the œdema had entirely disappeared; but the lochia continued to flow till the fifteenth. In six weeks the patient was quite restored. At the end of two years she again became pregnant, and went through the process of parturition in the most favourable manner. Com. by Dr. Duclos to the Faculty of Medicine of Paris, and published in their ninth Bulletin for 1818; and here abridged from the London Medical Repository, vol. ix. p. 515.

Of Serotine and other anomalous Uterine Gestations.—Under this head, cases are almost innumerably recorded of fœtal bodies retained within the uterus for long periods of time subsequently to the lapse of the natural duration of pregnancy. An unmarried female having become impregnated thoro furtivo, the uterus daily increased in size. The child was felt, from time to time, to move briskly in the womb, until within four or five weeks of the usual period of gesta-

tion. At that time the motions of the fœtus altogether ceased; and the uterus subsided into a tumour of three fingers' breadth round the navel, but without occasioning any pain which could prove an impediment to the usual occupations of the young woman in her capacity as a servant. From that time, however, a fetid sanies, like putrid catamenial discharge, distilled from the genital passage. During the continuance of this discharge, the patient was much harassed with headache, thirst, and febrile heats. After the lapse, however, of seven weeks, these symptoms subsided, and she seemed to have perfectly recovered. Her menses, which had been obstructed for two months, now returned; but with somewhat less than their accustomed regularity. In the mean time, her neighbours observed that the young woman's time of delivery had gone by, and that the previous enlargement of her abdomen had subsided altogether, although she had no child either living or dead. They therefore caused her to be prosecuted; and she was accused, before a public court, of having concealed or destroyed the fruit of her conception. She was eventually committed to prison, where she was severely interrogated, and likewise visited by midwives and surgeons. She was ultimately declared innocent of the matter with which she had been charged, and set at liberty. In about two years afterwards she was lawfully married; and, after living with her husband two years, she was regularly delivered of a female child, perfect in all its parts, and well formed, without experiencing, either during her nine months' gestation, or during her delivery, the least pain or inconvenience from the tumour just described. In two years afterwards she became pregnant again, and in due time she brought forth a son; and, as in the other case, without any pain from the tumour: the child, however, died in three days after its birth. In about eleven years after this period, the tumour began to be troublesome, and to give the woman pain. At length a fetid smell was perceived to issue from the patient's body; and a small aperture was formed, distant about a finger's breadth from the navel, where a portion of the sacral termination of a fœtal spine presented itself. Through this ulcer, and another which soon afterwards succeeded to it, and like the former furnishing a fetid ichor, small bones, which had been there enclosed, were carefully brought away in portions from day to day. In the mean time, the poor woman was observed to sink rapidly in flesh and strength; and one day, whilst the dressings were being changed, some of the food, which she had taken in the evening of the day before, was observed to be escaping through the wound. She survived in that state about a fortnight, when she died, at eleven o'clock in the forenoon of a hot day, in the month of August. On the same day, at three o'clock in the afternoon, the duties of a post-mortem examination were carefully performed upon the body. The uterus presented a remarkable aperture through its anterior and left lateral walling; and, within its cavity, several bones of fingers connected together at their joints were found lodged. The colon was similarly perforated; so that its contents were allowed to escape undigested before death. Ephem. Germanic. dec. iii. an. 4. p. 184.

It is under our present head of subject that we may perhaps with most propriety insert the following case of RETENTION OF THE HEAD OF A FŒTUS IN UTERO for seven years after the extraction of its body. The subject of the case was the wife of a mechanic. During the sixth and seventh months of her second gestation, she was greatly distressed by the unusually violent movements of her child in utero. When the full period of her gestation had arrived, her labour declared itself by a presentation of the secundines, accompanied by the feet. By GENTLY PULLING at the extremities, as the reporter of the case states, the body was separated from the head, and the latter left in utero. The patient nevertheless survived. For four years she took medicines, in order to be enabled to rid herself of the retained portion of her child, but without success; inasmuch as nothing, during the whole of that period was expelled, excepting some small portions of fœto-cranial bones, together with bits of putrid flesh, accompanied indeed by an abundant quantity of a fetid purulent discharge. During the three years which immediately followed she gave up the use of medicines. For the subsequent three years she enjoyed a tolerably good state of health, and in the mean time expelled the retained head of her fœtus, in pieces corresponding in size to the several bones singly of the fœtal skull. This process was accomplished by the action of the uterus alone, and without being accompanied by any symptom of inconvenience, with the exception of a slight sense of titilation scarcely painful. She was then left, it is added, in perfect health and full aptitude for future conception. Ephem. Germ. dec. i. an. 6, 7, obs. 222. An. Dom. 1675 et 1676.

The older obstetric writings abound with cases of retention of the head in the uterus after the patient had undergone the misery incident to the wrenching of the body from it by violent pulling. In the greater number of such histories, the exceptions being very rare indeed, the event has been represented as speedily fatal.

See a case of retention of the fœtus in the uterus for nine years. A country woman, aged forty-six, became pregnant in 1756, for the eleventh time; and at the full period of gestation, in September 1757, labour pains supervened, which however were not followed by delivery. But immediately afterwards there came on a watery sanguinolent discharge, which greatly afflicted the patient till January 1758; when she was able to leave her bed and to engage in some of her domestic avocations, but nevertheless continuing to be occasionally the subject of severe pains, especially in the right side. In June 1765, the discharge of the morbid fluid stopped: in August of the same year she experienced a difficulty in voiding her urine, accompanied by much severe pain like that of labour. From that time till towards the end of the same year she enjoyed a moderately good state of health. In the beginning of 1766, she became the subject of violent spasms, for which she was induced to consult a surgeon. The orifice of the uterus was at that time found closed. "By the use of oily injections for seven hours," the reporter states, "it became sufficiently dilated

to enable the surgeon to introduce instruments, with which he extracted a hundred and twenty pieces of broken bones." One of the bones of the head had caused ulceration of the urethra: but this part eventually healed, and the ability to evacuate the bladder was restored. Communicated by Dan. Schulz. Comment. de Reb. in Scient. Nat. et Méd. Gest. vol. xvi. p. 399.

Consult the following references to similar cases: Lowthorp's Abridgement of the Transact. of Royal Society, vol. iii. p. 224. Reid and Gray's Abridgement of the Transact. of Royal Society, vol. vii. p. 212. For a list of upwards of a hundred serotine gestations, see an Essay on that subject by Dr. Henry Gahn, published at Upsal in 1770. The manual and instrumental management proper to be adopted in such cases will come more properly under consideration when we shall have to treat of instrumental labours.

See a case of ossified uterus containing a fœtus, which also was ossified, in a widow of sixty years of age. The subject of this case had ceased to menstruate for about ten years. She had never borne a child; but had had an abortion soon after her marriage. She became the subject of violent pains of the hypogastrium in the beginning of June 1805, four months after the death of her husband, to whom she had been married twenty-six years. The pains appearing to resemble those of labour, examination was made per vaginam. A tumour was found bearing upon the vagina of a very indurated character; although the orifice of the uterus was undilated and its vagino-cervical portion presenting deeply, and in an elongated form, into the vaginal passage. The vagina itself seemed not to exceed an inch and a quarter in length. After three days of efforts resembling those of labour, no change presented itself in the state of the orifice of the womb: and it was determined in consultation to effect the delivery by cutting open the cervix uteri, which was done, without however accomplishing that object. The patient died the following morning. On opening the body, it was ascertained that the uterine tumour was of considerable size and irregularly osseous, consisting partly of uterus and partly of compressed and distorted remains of a fœtus ossified together. Com. by Dr. John Caldwell, of Preland, Londonderry. Edinb. Med. and Surg. Journ. vol. ii. p. 22. 1806.

Among the anomalous diseases incident to pregnancy the following case drawn up by Dr. John Blackburne, late of Henrietta-street, Cavendish-square, London, is one of the most extraordinary on the records of our profession. "About the beginning of April 1784, I was desired to visit a poor woman who suffered under the following symptoms. She complained of violent pain in the abdomen, back, and thighs; of constant thirst, and shiverings followed by heat and profuse sweats; her nights were restless, her breathing difficult, and she was also affected with dysuria and costiveness. Her pulse was hard and quick; she had no appetite; and presented the most horrid spectacle of emaciation I ever beheld. A hard unequal tumour occupied the whole abdomen, which on being gently agitated produced an evident fluctuation; and there was

a constant fœtid ichorous discharge from the vagina. She told me, that according to her reckoning, she had arrived at the eleventh month of her utero-gestation, and had happily passed through the regular gradations of pregnancy until the conclusion of the seventh month; when, immediately after raising a pail of water to her head, she was attacked with a most violent pain in the abdomen, which continued for the space of thirty-six hours; and was at length removed by bleeding at the arm and other antiphlogistic remedies. During several weeks after this accident, she felt great pain in the lower part of the belly, whenever the child which had quickened about the fourth month moved; and on these occasions the child seemed to her to rise up as high as the epigastric region. In this state the poor woman continued until about a week before the natural period of gestation, when her breasts became full of milk, and a small quantity of blood and mucus flowed from the vagina. The milk deserted the breasts, and the uterine discharge ceased, both at the same time, after a very short continuance. At the completion of the nine months, regular but very gentle labour pains came on; these being inefficient, were appeased by a proper dose of laudanum, the attending surgeon judging them to be only what are called grinding pains. Nearly in the course of a week the same kind of pain recurred, but it was now constant, and without remission, and it particularly affected the back and iliac regions. At this time also a slight colouring issued from the vagina, and a copious flow of milk from the mammæ. The pain too was removed by laudanum, and never returned.

Under circumstances so striking and uncommon, I would not trust to my own judgment, especially as I did not practise midwifery; and I therefore requested the opinions of the most eminent of that profession in Durham. On examination, the os uteri was found almost close to the orifice of the vagina. It was a general sentiment that there did exist a fœtus, but whether extra-uterine or not could not be determined. It was agreed that the patient was too much reduced to undergo any operation, and that she must be left to nature in a great measure, only persevering in the mild and palliative means which had been previously recommended. I continued my attendance. On the 8th of May my patient discharged by stool four quarts of very offensive purulent matter, mixed with blood. Most evident relief as to all the hectic symptoms succeeded to this evacuation, the appetite was much improved, and the tumour of the abdomen had greatly subsided. This flattering respite was however of no long duration; in the space of a week all the unfavourable signs returned, and within the ensuing six weeks she was relieved by death from all her misery.

I obtained leave to have the body opened. On dissection the appearances were as follow:—The round and broad ligaments, and all the appendages of the womb, together with almost the whole of its substance, were consumed, and there remained only a thin, moist, calcareous or earthy shell, which nearly enveloped a perfect fœtus. These remains of the uterus rested on the sacrum, having sunk down to the bottom of the pelvis. The head of the child occupied

the fundus uteri, the substance of which had been so entirely wasted away that the hairy scalp was left uncovered, and was separating from the subjacent cranium. The whole was so putrid as to emit a most intolerable stench, and could not be preserved. The viscera of the abdomen were all of them sound and perfect, and no ulceration could be perceived in any part of the alimentary canal, though carefully searched for. On cutting into the great intestines, they were found to be replete with the same kind of substance, in a fluid state, as composed the earthy tegument of the child in the pelvis."

They were not allowed to examine any other part. The patient was thirty-six years of age, of a fair complexion; she had been a stout well-formed woman, and had borne a child about seven years previously to her death. The author adds a few unimportant remarks. Simmons's Medical Journal, vol. viii. p. 60. London, 1787.

An action of the absorbents very analogous to what was observed to have operated in the above case, may be pretty easily recognised as having been engaged in the production of some of the more important results of disease traceable in the following:—

A woman of sanguine constitution, good habit, and of middle stature, carried her child in the uterus for fifteen years. Pains had come on at the proper time, but without any effect. The catamenial secretion had been more sparing than before her supposed pregnancy; and in her fifty-third year, after having been afflicted with a grievous diarrhea and fever for some time, which medicines failed to cure, she died. On dissection, as soon as the knife had passed through the parietes of the abdomen and uterus, "WHICH WERE ONE," about sixteen pounds of a serous humour escaped and brought a fœtus into view; but there was scarcely a vestige of uterus to be seen. Com. by Dr. Borchardi. Ephem. Germ. dec. iii. an. 3, p. 15.

OF HERNIA OF THE GRAVID UTERUS.—Hernia of the uterus, under any circumstances, is among the most rare malpositions of that organ. But of the small number of such cases which we find recorded, we meet with several examples of hernia of the GRAVID UTERUS. M. Simon, in his researches on the Cæsarean operation, Mém. de l'Acad. Roy. de Chirurg. tom. ii. p. 231, refers to a singular case of this kind, reported by Sennert. "The wife of a cooper, whilst assisting her husband to bend a pole to make hoops with, was struck in the left groin with one of the ends of the pole. Some time afterwards, there supervened a hernia at the part injured; and it arrived at such a size as not to admit of being reduced. The woman was pregnant at the time. The tumour increased in volume from day to day. One could easily both feel and see the movements of a child under the integuments of the part. The descent at length became so considerable, that the poor woman found herself obliged to sustain it by a bandage; and to support it, sometimes on one thigh, and at other times on the other. This state of things naturally causing great anxiety to the friends and

husband of the patient, they requested the professional aid and opinion of Sennert, who at once told them that he saw no probability of her being able to bear a child by the natural passages, and that it would be necessary to open the tumour in order to give it birth. At the end of the ninth month the woman was taken in labour. The pains were strong and long-continued. Sennert's advice was adopted; the uterus was opened, and a living child, with its placenta, was brought through the wound. It was found impossible, even after the operation, to effect the reduction of the womb. The edges of the external wound were made mutually to approximate by means of sutures: the uterus gradually contracted, and the patient had all but recovered; when she again sank suddenly into a state of extreme feebleness, and she died. A post-mortem examination threw no light on the cause of the death: all the internal parts presented their natural appearances. Sennert, lib. iv. Medic. Practic. part 2, cap. 17.

We are informed by Ruysch, of another woman who became the subject of a hernial protrusion of the uterus at this part, consequent upon a suppuration of the groin; and that, during her pregnancy, the hernial tumour hung pendulous as low as the knees. But, after the accession of her labour pains, the midwife happily succeeded in effecting the reduction of the uterus, and so accomplished the delivery by the natural passages. It is obvious that the hernial cyst had not, in this case, contracted adhesions to its surrounding tissues, or else the midwife could not, as she represented, have effected its replacement in the abdominal cavity. Mém. de l'Acad. Roy. de Chirurg. tom. ii. p. 231.

Hildanus, in his Chirurgical Observations, quotes a letter from Doringius, in which that physician reports a similar case of displacement of the uterus, from Nicolas Polinus's Silesian Journal, of which the following are the particulars: "A poor woman, of Nisse, in Silesia, was mother of nine children in fifteen years' marriage. In her first confinement she was deserted by her midwives, in consequence of her violent temper, and was therefore under the necessity of being delivered by herself. She felt, on that occasion, that something very extraordinary had taken place in the lower part of the abdomen. She nevertheless brought into the world, in subsequent years, seven more children, without sustaining any unusual difficulty, although without any professional assistance. She had not been long pregnant for the ninth time, when she perceived in her left groin, and under the integument of the part, a tumour which gave her great uneasiness. This tumour, in the sequel, increased so much in magnitude as to have equalled a beast's bladder in a state of the utmost distention; and became so monstrous in its dimensions as actually to reach the patient's knees. It was then easy to ascertain the fact that a fœtus was inclosed within it. The poor woman experienced the most intense pains whenever she found it necessary to relieve herself, or to change her position. As the full period of her gestation approached, the Senate of Nisse having been advised of her poverty, extended their protection to her, and consulted a physician and many surgeons in her

case. It being impossible to effect her delivery in the ordinary manner, it was the result of the opinions thus obtained, that it should be proposed to make an incision through the parietes of the tumour, although it was acknowledged by each and all the consultants that they had never seen nor heard of such a case before. The operation was performed; and a living well-grown child was brought into the world, which, although very strong, did not live for more than a few months. The mother died in about three days after, having suffered unheard-of pains. Mémoire par M. Sabatier. Mém. de l'Acad. Roy. de Chirurg. tom. iii. p. 387. Edit. 4to. 1778.

We have yet to record one more example of hernia of the gravid uterus, which must be acknowledged to possess extreme interest, in addition to its unquestionable authenticity. The subject of the case was a poor woman of Hosterkiob, a village near Hirscholm. At a period of her gestation not stated, she became the subject of a voluminous tumour, which presented itself at the right groin, and occupied a large space on the anterior and interior part of the corresponding thigh, and reached even to the knee. It was of a roundish form, covered with common integument, elastic to the touch, presenting a manifest fluctuation, but was not painful. The poor woman, who had already had four children, expressed her assurance that she had felt, in this tumour, motions like those of a living child; and this was confirmed by M. Sager's testimony of his having himself distinguished, through the integuments, the form of a fœtus. After consulting Dr. J. S. Saxtorph, by letter, M. Sager was induced to send his patient to be under the immediate care of that gentleman. She was admitted into the lying-in hospital, under the direction of Dr. Saxtorph, when the tumour had acquired about the size of an uterus at seven months' gestation. "But," observes Dr. Saxtorph, "I could not feel the motions of the child within it: I only recognised a fluctuation, which indeed was evident enough. In making examination par vaginam, I found the orifice of the uterus as it generally is in women who have had many children; but I could not distinguish at its neck any body bearing upon it. These observations were confirmed by M. Bang junior, and by Mad. Frost, the head midwife of the hospital. In examining with more care the origin of the tumour at the groin, I found that it commenced near Poupart's ligament, in such a manner however that it did not pass under this ligament, but was rather adherent to it. By placing the hand on the neighbourhood of its origin, and also above and below it, and by compressing the integuments as much as possible, one could not ascertain that any, or any part, of the abdominal viscera, with the exception of the uterus itself, had been pushed into the tumour." The patient was admitted into the hospital on the 24th of August, when she was considered as having pains premonitory of the speedy accession of labour. The case was seen by many physicians and surgeons, and by several pupils of the hospital, of whom the greater number came to the conclusion that the swelling at the groin was not the effect of any malposition of the uterus; but that it was a case of an encysted tumour, and that

it contained no fœtus. Inasmuch as the pregnancy was very doubtful, and the rules of the hospital not permitting the reception into it of any person not actually in labour, it became necessary to transfer the patient from the lying-in hospital whither she was first sent, to the civil hospital, to be under the care of Professor Thal.

On the following day that learned professor reported that he had himself seen on the preceding evening the movements in the tumour as originally described by M. Sager, and that he did not at all doubt that they were occasioned by the presence of a child. On the 13th of September the poor woman was again examined by Dr. Saxtorph, when the tumour was increased in size; but her functions generally were moderately well performed. "On the 1st of October," proceeds that gentleman's account, "M. Thal informed me, that on the preceding night an aqueous fluid, which was inodorous, had escaped in abundance from the vagina, without being preceded, accompanied, or followed, by any pain. The size of the tumour had sensibly diminished, and the feeling of tension which had previously attended it was much diminished. I was not able by means of the taxis to recognise any positive change in the state of the orifice of the uterus. But in examining the external surface of the tumour, I fancied I could distinguish a resisting substance similar to the body of a fœtus. Having several times put my hands cold upon its surface, it afforded me no spontaneous movements; Dr. Thal, however, reported to me, that M. Hahn, first surgeon to the naval legion, had distinctly perceived such movements on visiting the patient some hours before."

"On the 2nd of October the patient was taken with acute pains in the tumour. These pains were intermittent, and accompanied by efforts such as are usually incident to the function of parturition. The tumour exhibited contractions similar to those of which the fundus of the parturient uterus is the seat: it was now determined to send the patient back again to the lying-in hospital. That object having been effected, the midwife examined the vaginal part of the uterus, and found its orifice dilated to the extent of an inch and a half. The vertex of the fœtal head was felt soon afterwards to present, accompanied by a prolapsion of the umbilical cord. The pains continued with much force and regularity; but the labour did not advance in proportion to their intensity. The waters escaped not in greater quantity than on the night before: the vagina was however sufficiently lubricated with the usual mucus tinged with blood.

I saw the patient again in the forenoon, accompanied by Professors Fenger, Thal, and Bang. The dilatation of the neck of the womb was greater. The head of the fœtus filled a greater space WITHIN THE BRIM OF THE PELVIS. The integuments of the head began to tumefy, and a larger portion of the umbilical cord had descended into the vagina. After the lapse of some hours the pains became less urgent. Nevertheless the head of the child had advanced further within the brim of the pelvis, and was presenting in a good position. It was however far from clearing the os uteri, which still remained insufficiently dilated. At five

o'clock the pains were vigorous; the head was advancing, but very tediously; but the dilatation of the uterine orifice was still going on, and at eight o'clock in the evening it was quite obliterated.

The head of the fœtus was now become engaged in the pelvic cavity, and the violence of the contractions pushed it by degrees towards the inferior aperture. I now remained with the patient, attended by Drs. Fenger, Thal, and Bang, together with Messrs. Wallich, Lynge, and Sass, pupils of the hospital; and the patient was delivered at nine o'clock the same evening, by the unassisted efforts of nature, of a still-born female child, which weighed five pounds and a half, and of which the length measured eighteen inches. After the birth of the child, the tumour, of which it had formed the greater part, diminished in bulk. It no longer descended so very low as it had done, and it could be easily lifted up towards the abdomen. After having waited in vain three-quarters of an hour for the spontaneous expulsion of the placenta, I decided on the propriety of carrying my hand into the uterus, in order to finish that part of the labour, the patient being a good deal exhausted. No hæmorrhage took place. The tumour, which I well recognised as being the uterus, preserved very nearly the same size and shape as it immediately acquired after the birth of the child. I then surrounded the abdomen with a broad bandage, by the aid of which I supported the tumour in such a manner as to prevent its falling on the patient's thighs.

The sequel of the case was very prosperous. Some gastric symptoms, which presented themselves two days after the patient's delivery, yielded promptly to the action of an emetic and of digestive remedies. Her strength was re-established; and on the 23rd of October, being twenty days after her delivery, the poor woman was completely restored to health, and returned to her home in a voiture. A great part of the uterus remained extra-ventrally situated, and formed a hernia complicated with the presence of some sort of cyst charged with fluid, which could be easily distinguished by the touch. We could now, more distinctly than before the delivery, ascertain the fact that the uterus had not got out of the abdomen by any natural opening, and that on the contrary, it had passed between some fibres of the abdominal muscles." Abridged from a transcript of the original communication as published in the Transactions of the Royal Society of Medicine of Copenhagen, for 1817. Nouveau Journal de Médecine, etc. etc. tom. v. p. 193.

# CHAPTER XIII.

## OF EXTRA-UTERINE GESTATIONS.

It is the general opinion that John Riolan, commonly in English references called Riolanus, in his Anthropography published in 1650, was the first writer who reported a case of extra-uterine gestation. It was a fœtation of one of the fallopian tubes which he had occasion to witness in the person of one of the laundresses to Queen Ann of Austria. The body was inspected in the presence of Peter Seguin, First Physician to her Majesty.

The fact of an extra-uterine pregnancy had however been seen and recorded, although perhaps not recognised as such, as early as the year 1581. In the sequel of an article of feeble criticism on a case of mismanaged rupture of the uterus, or of an extra-uterine fœtation cyst, according to the reporter's opinion, we are referred to a case which may be presumed to have been a gestation of this kind, spontaneously relieved by an abscess in the left hypochondrium. The case is given as an extract from a number of the Silesian Chronicle, dated 1581, and is stated to have been written by Polinus. "A woman who had borne ten children during a fifteen years' marriage, conceived again; and at the full period of her gestation, was delivered through an abscess of the left hypochondrium; whence a well-grown infant was extracted, which was baptized, and afterwards survived a year and a half. The mother, however, was reported to have died in great agonies on the third day after the delivery. Com. by Mr. J. Younge. Jones' Abridgment of the Transact. of the Roy. Society, vol. v. p. 306. It is probable indeed that the above mere newspaper account obtained no credit at the time of its publication: for we find that even Riolan's case was not believed which occurred many years afterwards; and the sceptical Guy Patin, who was an enemy to all novelties, asserted publicly that Riolan had attested the case in order to please the Queen of Austria's first physician.

There are enumerated the following varieties of extra-uterine gestations, viz. ovarian, fallopian tube, and ventral or abdominal gestations. The phrase EXTRA-UTERINE CONCEPTION, frequently used by writers on these subjects, cannot be properly applied, excepting to the ovarian variety of the gestations here supposed: for whatever afterwards may become of the ovum, it must obviously be presumed that its conception must have taken place in the subject organ of conception, that is THE OVARY. In the further illustration of this subject, the author proposes to place before his readers ABSTRACTS, many of them of

tabular brevity, of the several forms of extra-uterine gestation just enumerated, in the order as nearly as possible of their supposed dates, beginning with the ovarian variety, which experience proves is of the least frequent occurrence.

Of Ovarian Gestation.—The first example of recognised ovarian gestation was observed in the year 1682, by a physician of Perigord, named St. Maurice. See Bibl. Anat. Manget. tom. i. p. 523. For the second we are indebted to a physician of Lambese, in Provence, named Montagnier. See Vieussens de Structura et Usu Uteri et Placentæ. In these two cases, the curious fact was observed that a fœtus of about two months growth had fallen into the cavity of the abdomen; the ovarium in each case having a rupture at its most depending part. The Memoirs of the Academy of Sciences for the years 1701, 1743, and 1759, furnish cases of the same kind, detailed with more precision; and in all of them the fœtus was developed sufficiently for its principal parts to be distinctly seen, while yet remaining within its ruptured calyx in the ovarium. The next recorded example we have of ovarian gestation was reported by Vieussens: A woman, thirty years of age, and married thirty months, was happily delivered in February 1697; and unknowingly became pregnant again. During the earlier part of this subsequent gestation she sustained a hæmorrhage, which greatly weakened her; and about eight days before her death she was seized with fainting fits, and in spite of every method of treatment she died. The abdomen was found filled with blood, and a two-months fœtus floating in it. The right ovarium was found lacerated, and about six times its natural size. All the other parts were sound. Varii de Arte Obstetric. vol. ii.

A noble lady, who had had eight children, and had not been pregnant for five years, became again pregnant. But because she had not menstruated at the proper time, nor in the proper manner, she felt disposed to believe that she was pregnant. Soon after, however, she fell into a fainting fit, and complained of great pain in the right groin, and in a short time subsequently of labour pains. After the lapse of a few hours she died. The body was opened, and a fœtus was found in the abdomen, and the intestines floating in blood. The ovarium of the right side was lacerated, and contained clots of blood. Com. by I. Sigismund. Elsholt. Ephemerid. Germ. Append. dec. i. an. 4 et 5, p. 376. Lipsiæ, 1673.

We moreover meet with two cases of this kind in Dionis's Anatomy of Human Bodies Improved. Pp. 292 and 339. London, 1703.

A woman was admitted into the Hotel Dieu towards the end of September 1694, to be delivered of a third child, of which she was then pregnant. About a fortnight before the accession of her labour she was attacked with excessive pains in the epigastrium, and in different parts of the abdomen, which were not a little exasperated by the motions of the child. She died on the 21st of October. On opening the body, the fœtus was found in the abdomen, outside the uterus; that organ and the vagina being in a perfectly healthy state. The womb was about the size of an uterus ten or twelve days after delivery. Its internal

orifice was livid by being too much handled both before and after death. There was no aperture in the parietes of the uterus, nor any cicatrix indicating that any such aperture had ever existed. "The right ovary was quite healthy; but the tube and its appendix, in that part where they came in contact with the cyst, was of the size of a pullet's egg, and filled with a putrid serosity. The broad ligament of the left fallopian tube and its appendix, the fimbriated termination, were in a putrid state. The cyst containing the child was situated between the womb and the rectum, in the cavity formed by the curvature of the os sacrum. The child was on its knees, inclining on the right side, and might have been dead about a week, for the epidermis easily separated. The placenta was still attached to it by the navel-string. The cyst was of course ruptured; but the edges of the wound having again approximated, so as to appear united, it resembled a skittle bowl. A great quantity of coagulated blood was found discharged into the abdominal cavity.". Saviard's Surgery, Sparrow's translation, obs. lx. p. 136.

An unmarried woman, thirty years of age, died at Lille from the effects of a violent and fixed pain of the left iliac region. On examination of the body after death nothing was to be seen externally. On a first view of the interior of the body, after dividing the abdominal integuments, a slight inflammation was seen to suffuse the large intestines: but what most attracted the attention of the gentleman upon whom this duty devolved, was the left ovary. It was of the bulk and figure of a pullet's egg. The fimbriated termination of the fallopian tube of the same side was seen bent upwards, and adhering to it. M. Varacquiere having laid open this ovary, there came out of it about an ounce of a lymphatic fluid, like whey, in which was found a fœtus of two inches and a half in length, in a state of decay, together with a placenta and umbilical cord, the latter an inch and a half in length, and some lines in circumference. The placenta was attached to the upper part of the ovum, and there of course identified with the substance of the ovarium. The uterus was in its natural state, but somewhat inclining towards the left side. The right ovary and fallopian tube exhibited no deviation from their natural state. The most striking feature of this case, as it presented itself on examination, is yet to be mentioned; viz. that the hymen of its subject was in a perfectly entire state. But the reader of the present work is well aware that the same state of that tissue has often co-existed with genuine uterine gestation. Com. by M. Varacquiere, Demonstrator of Anat. at Lille. Hist. de l'Acad. Roy. des Sc. etc. pour 1756, p. 48.

A case of ovarian gestation in a woman of forty years of age. The subject of this notice died from the effects of a blow which she received on the abdomen. On inspecting the body an encysted tumour was found in the right iliac fossa, It proved to be the right ovarium greatly enlarged, through the parietes of which the body of a child might be felt. On making an incision into this cyst a female child came into view, and was forthwith withdrawn. It appeared to have lived till the seventh month of gestation. It was quite sound, and in good order. Journ. Gén. de Méd. etc. tom. lvii. p. 127.

A fœtus reported to have been found in the right ovary by Dr. Forrestier, Physician to the army of the King of France, in North America. The wife of a porter became pregnant in September 1784, and went on well till November, when she was seized with colic pains; and on the 8th of April she had a great discharge of blood from the anus, which continued till the 10th, when she died. On opening the body, the uterus was found to occupy the left iliac region, its cavity not larger than what might contain a hen's egg. On the right iliac fossa was the right ovarium found dilated to the size of a hog's bladder, adhering to the neighbouring parts, and containing the entire skeleton of a fœtus, together with clots of blood, resembling those which had been discharged by the anus. One of the clots was found in the immediate neighbourhood of an adhesion, which had taken place between the ovarium and intestine, which induced the reporter of the case to suppose, that the discharge by the anus was the result of a communication which had been formed between the ovarium and intestine. Annals of Medicine, vol. iii. p. 379.

A case of rupture of an ovarian gestation cyst at an early period of the pregnancy by M. de la Chese. The extremely painful and distressing symptoms usually attendant on such ruptures are described with great minuteness. "In a moment afterwards she felt all the preludes of an imminent labour; she called her surgeon, and died in his arms, saying 'I am being delivered,' although there appeared outwardly no distillation of any kind of moisture nor flooding, nor any other indication of an actual parturition. On opening the body M. de la Chese found the intestines of his late patient floating in blood, and amongst masses of coagula a fœtus, about as large as the thumb, distinctly formed. The right ovarium was found torn in the direction of its length: it was not in connexion with its adjacent fallopian tube, and it was four times larger than the ovary on the left side; being about the size of a hen's egg. Both fallopian tubes presented the appearance of being in their natural state, viz. that state which is usual to them in the absence of pregnancy, excepting that their bloodvessels were full of blood." Lowther's Abridgment of the Phil. Trans. vol. iii. p. 217.

A case of ovarian gestation of fifteen years' duration, of which the remarkable peculiarity was, that upon making an incision above the pubis into the bladder a great many calculi, together with one hundred and twelve pieces of bone, being portions of a fœtal skeleton, partly entire and partly eroded, were found within that viscus. The operation was performed upon the patient with a view to afford her relief. She however died on the third day subsequently. Upon comparing this result with other facts, which were ascertained on inspection of the body after death, Professor Josephi, of Rostock, felt himself authorized to infer that the case had originally been one of fœtation of the right ovary. Judging from the account furnished by Dr. Arneman, it is equally obvious to the conclusion that the right fallopian tube of the same side must also have been implicated in the extraordinary pathology of the case from a very early period. Com. by Dr. Arneman, Med. and Physic. Journal, vol. xiv. p. 519. Lond. 1805.

The subject of the next case was a lady of thirty-nine years of age, who had suffered severely from the 12th of December 1818 to the 9th of June following, when she died. The body was examined by Dr. Granville. The left ovary appears to have constituted a part of the fœtation cyst. "That part of the covering of the ovarium, over the inner surface of which the placenta was engrafted was lacerated, so as to have torn the adhesions of the latter, thereby producing that sudden and fatal hæmorrhage which destroyed the lives both of the mother and the child, and filled the abdomen with blood." The fœtus in this case is said to have been one of about four months' growth. Med. Chirurg. Journ. vol. iii. p. 485. 1816.

Of Fallopian-Tube Gestations.—It has been already stated, that the first recognised case of extra-uterine pregnancy was one of fallopian-tube gestation; and it being the variety which is met with incomparably most frequently, it is probable that many cases of this form of conception had taken place before one example had been known to have occurred of either of the other varieties. The theory of the fact, as well as of the frequency of fallopian-tube gestations, is very obvious, and is founded on the accepted doctrine that the ovum is conceived in the ovarium, and that from the ovarium it is safely delivered into its natural duct—the fallopian tube, and by it transmitted into the uterus. That portion of the tube which has first to receive the embryo is of ample capacity, and bounded by so great an extent of protecting margin in actual adherence to its corresponding ovary and every where investing its germinating calyx, that the escape of the ovum from the said calyx must be identified with its reception into the fallopian tube. But that tube is naturally so extremely small, that the passing of a hog's bristle into it and through it, is often attended with no little difficulty. It is however known to be capable, in its healthy state, of much development, so as to be competent, without a reasonable chance of failure, to furnish for the embryo a safe passage from its corresponding ovary into the uterus. All that has been now described is of course well and safely done, when this beautiful apparatus is in a sound and healthy condition: but what might we not infer were we to suppose an unhealthy state either of function or structure of so important an organ? We know that opposite surfaces of living tissues, when brought into close contact in states of inflammation, are apt to become mutually adherent. Now the proximity of the interior surfaces of the fallopian tubes is such, that a state of inflammation of them must always expose them to the risk of becoming mutually adherent, that is, in other words, of having their passages blocked up, and rendered impervious. Now, should this happen, as surely it should be expected sometimes to happen, after the reception of the embryo into the pavilion of the tube, and before it shall have effected the whole of its transit into the uterus, it is manifest that the ovum must be arrested on its route, that route being blocked up by an impediment totally incapable of being removed, by any known suggestion of art or science.

Retrocession towards the ovarium, or ejection into the abdominal cavity, must be considered nearly equally out of the question. Attaching itself to the parietes of the tube by the absorbent vessels of the chorion, it there becomes developed, and in proportion as it acquires an enlargement of volume, becomes the cause of a daily increasing development of the fallopian tube, by which are produced the several phenomena now to be illustrated by brief sketches of some of the most important cases which we find on record.

Among the earliest essays which we find published on the subject are those by Rinthelius in 1670, and by Tilingius in 1671; in both of which are detailed several unquestionable cases of fallopian-tube gestations. Massuet, in his inaugural dissertation, published at Leyden in 1729, de Generatione ex Animalculo in Ovo, alludes to several cases of this variety of conception which had occurred before his time. To these may be added Sachs's case, Ephem. Germ. An. 1670, obs. cx. p. 224; Vieussens' case attended by Cyprian in 1694; Dionis's cases published in 1681, and again in 1696; Dr. Bayles's cases of one pregnancy of twenty-five years, and another of twenty-eight years' gestation; Riolan's cases, already referred to, Anthropolog. lib. ii. cap. 35; and Vassal's case of a subsequent period, of which the author has not been able to discover the precise date. Its facts, however, are interesting. "In opening the body of a woman who had died when she was thirty-two years of age, he found a double uterus, in one of which a fœtus had been formed; but for want of sufficient room it had burst its tenement, and escaped into the abdomen, causing so great an effusion of blood, and such violent convulsive movements of the mother, that she died on the third day." The ruptured uterus in this case was most probably the ruptured fœtation cyst of the fallopian tube. Varii de Arte Obstetric. vol. ii.

The following references are generally arranged according to the dates of the cases which they profess to narrate.

"In dissecting the body of a woman who supposed herself three months gone with child, I found the womb very small, not larger than a virgin's. Continuous from this uterus was one of the fallopian tubes, that on the left side, having the appearance of being distended into a great cyst, which, upon being laid open, presented within its cavity the skeleton of a fœtus, of which the navel-string was covered over with an incrustation of a sort of substance not unlike plaster." Com. by Dr. Fern. Lowther's Abridgment of the Transact. of the Roy. Society, vol. iii. p. 221.

A goldsmith's wife, aged thirty-four years, was admitted into the Hôtel-Dieu, in order to be confined. She supposed herself nearly nine months gone in her gestation. She had been subject, during the three first months of her pregnancy, to great and continued pains about the navel. During the three subsequent months she had frequent convulsions, apoplectic fits, and syncopes. Between the sixth and eighth month her health was much better. At length her pains became so severe that she could lie neither on her back nor on either side, and

was obliged to sit or kneel. Thus incessantly harassed, she soon died. On opening the body, the child was found in a cyst, which appeared to be an elongation and extension of the right fallopian tube. This cyst was found, as if fallen from the right side of the epigastrium to the left. To this inclination of the fœtation cyst, in consequence of which the uterus itself was thrown out of its natural position, was ascribed a great difficulty which had been encountered in reaching the orifice of that organ during examination before death. Com. by Dr. Fern. Lowthorpe's Abridgment of the Transact. of the Royal Society, vol. iii. p. 219.

A case of fallopian-tube gestation, discovered after death, in a woman who had believed herself pregnant, but who died from a fever apparently unconnected with her extraordinary pregnancy. The fœtus, of about three months and a half's growth, was found in an unruptured cyst, in the right fallopian tube. The cyst was lined with much mucus. This mucus, as described by the reporter, the author takes the liberty of suggesting, might probably have been of a deciduous character. Between the cyst and the uterus there was not the smallest communication to be traced, even with the aid of a blow-pipe. The fœtus was remarkably shrivelled up; so that the bones were strongly shadowed through its integuments. The placenta was attached to a part of the cyst. Mém. de l'Acad. Roy. des Sciences, tom. pour 1702, p. 298.

The next case is a contribution of M. Littre. The subject of it had been married twelve years. She had had three children during the first six years of her marriage, and during the three succeeding three miscarriages. In August 1701, she was seized with pain of an acute character in the right iliac region. In the beginning of the November following she was visited by another attack of pain, immediately below the liver, where a tumour could be felt, of the size of two fists. Towards the end of December a fever supervened, which lasted four months without intermission; but was OCCASIONALLY attended by shiverings and paroxysms. At this time there was great aversion from food, accompanied by faintings, hiccough, vomiting of blood, bloody and purulent motions, mixed with masses of putrid flesh, hair, etc. The patient was, moreover, constantly harassed with ineffectual attempts to relieve her bowels. She suffered from frequent and violent colics, spittings of blood, obstinate vigilance, delirium, convulsive motions, unsufferable pains in every part of the body, even to the marrow, as she expressed herself, within the bones, and to the roots of the hair and the nails. She was likewise in a state of extreme feebleness. The whole skin, except that of the face, was of a darkish hue, indurated, and, as it were, incrusted, to the thickness of more than a line. At length the poor woman began to void pieces of bone by the rectum, as those of the fœtal extremities, deprived of their epiphyses. M. Littre judged, from the sizes of these, that the fœtus had arrived to the growth of about six months' gestation. On making particular examination into the special localities of the case, its learned and ingenious reporter found ulceration and solution of continuity on the right

side of the rectum; through which he could pass his finger far enough to ascertain the presence of the decayed remains of the fœtus. He determined therefore, if possible, to bring the whole of the skeleton away by means of instruments. With that view he procured an instrument to break down any fœtal bone which he might encounter. The instrument is indeed very skilfully contrived, and well adapted to the confined situation where it was to act. It consists of two parts, like a pair of scissors, having edges cutting vertically, but sufficiently guarded on either side to prevent its encroachment on tissues not intended to be divided by it. The bones, after having been sufficiently cut down by this instrument, were brought away one fragment after another by a pair of small forceps, of the same general appearance with the cutting instrument, a little more curved, but not armed with a cutting blade. This process, most painful and most distressing as it must have been, lasted a fortnight. M. Littre then passed up diluent and demulcent lotions to foment the surfaces, and to cleanse them well from all sorts of impurities. The patient eventually recovered her natural health and strength; and in August 1702 she began again to menstruate, and found herself quite competent to resume her family duties and occupations.

The whole of the above case, for the present report of it is but a very brief abstract of it, may be recommended as a model of accurate professional composition; and its conduct, as an object of art, is a proof of the great advancement of surgical information and dexterity in France a hundred and twenty years ago. Mém. de l'Acad. Roy. des Science, tom. pour 1702, p. 241.

A case of PECULIAR variety of fallopian-tube gestation. The subject of it went to the full period of her gestation. A tumour pointed towards the navel, which discharged a serous fluid. It was opened, and a child in a putrid state, which it contained, was withdrawn. The woman died in eleven days afterwards. The fœtus was discovered to have been contained IN A CYST WITHIN THE EXTERNAL MEMBRANE OF THE FALLOPIAN TUBE. Hist. de l'Acad. Roy. pour 1714, p. 23.

A poor woman, of the town of Troyes, who had been married four years, and who had a miscarriage in the fourth year of her marriage, became pregnant again. At the full period of her second gestation she was taken with violent pains, similar to the pains of the latter stage of labour. She remained in the same state for two days. It was then proved that the uterus was empty, although the child was felt to move in the abdomen of its mother with more force and freedom than before. The entire faculty of Troyes met in consultation on the case, and came to an unanimous opinion to recommend gastrotomy as the safest practice; but the patient declined to submit to an operation. During the month immediately following, she was frequently attacked by abdominal pains of extreme severity; of which the paroxysms however were observed to become shorter and shorter in their duration. Nevertheless, she sank into a state of weakness and exhaustion, which excited great alarm for her life. She, however, gradually recovered; and, at the end of eight months, she found herself in a state to

resume the laborious occupations of her condition in life. She lived without any essential change of circumstances as to her extra-uterine fœtation for thirty years; of which period she passed the five latter years at Joigny. She never menstruated subsequently to her accident, nor ever ceased to have milk in her breasts. At length, on the 22nd of July 1747, she died at the Hôtel-Dieu, at Joigny, of effluxion of the chest, at the age of about sixty-one years. On opening the body there was found in the cavity of the abdomenan oval mass, as large as a man's head, attached to the epiploon, peritoneum, and mesentery, by its fundus, and apparently setting off from the right fallopian tube. On opening this mass, which weighed nearly eight pounds, it was found to contain a male child in a state of perfect preservation, and without being surrounded by any fluid. The skin of the fœtus was very thick: it had also hair; while two incisores teeth in each jaw were ready to cut the gum. The enveloping cyst was partly osseous and partly cartilaginous. It was almost every where about two lines thick, except in the immediate neighbourhood of the placenta; where, however, it had the same consistence. The external surface was studded with little eminences which were of a sabulous nature; and the internal was closely applied, as if moulded, to the parts of the child. An opening in the placenta appeared as if intended for the insertion of the umbilical cord, which was dried up to about the distance of about a finger's breadth from the navel. The parts of the mother, with the exception of such results as were obviously to be imputed to the adhesions already described, were in their natural state. The uterus was especially healthy.

The fœtal part of the subject of the above case, by which it is to be presumed we are to understand the extra-uterine cyst, with its contents, was presented to the Academy at one of its sittings. Hist. de l'Acad. des Sciences pour l'an 1748, p. 51.

A case of fœtation of the left fallopian tube, whose subject was a woman of Lyons. It is stated to have existed for a period of six or seven years, and then to have destroyed the patient. At the full period of gestation, she was seized with pains similar to those of labour; but she gradually recovered her health. A short time before her death, she was again attacked by similar pains, which continued a month; but she again, in some degree, recovered. In June 1757 she was visited in the same way a third time. At this time there was fever. The pains were also accompanied by a diarrhœa, so that all that was soft in the structure of the child, together with the placenta, was thus voided by the rectum. On inspecting the body after death, the entire skeleton was found to remain. The bones were considered sufficiently large for a fœtus of ten months' growth. The parietes of the cyst, which had contained the fœtus, were identified with the left fallopian tube prodigiously developed. That tube, the reporter states, was of the same thickness and the same volume with the uterus. It had formed a communication with the intestines. The patient died from gangrene of the parts concerned in this com-

munication. No name is attached to the above case; but the facts which it reports are authenticated by the editors. Journal de Médecine etc., vol. viii. p. 62.

A case of fallopian-tube gestation, extremely well described by M. Littre. The subject of the case was presumed to be in the seventh month of her pregnancy, when she sustained a violent fall on her knees. M. Littre saw her, for the first time in three days after her accident; and found her in the last extremity. Her skin was suffused with a profuse clammy perspiration. Her countenance was extremely pale. The abdomen was large and tense, and she was harassed with continual retchings to vomit. Her breathing was greatly oppressed. Her pulse was exceedingly small and intermittent, and she was often seized with faintings; and, in short, she was all but absolutely speechless. She died in about three hours after M. Littre's visit. On inspecting the body next morning, and immediately after making the first incision into the abdominal cavity, there issued from it, with much impetuosity, a great quantity of blood. It was dark-coloured and fluid, with the exception of a small coagulum which was found adherent to the left broad ligament of the uterus. The source of the hæmorrhage was ascertained to have been the left fallopian tube, where a rupture was seen to have taken place at the distance of about five lines from its fimbriated termination. At the ruptured part, M. Littre remarked a round transparent body of an inch and a half in diameter, which contained a fluid and a fœtus swimming in it. The cavity of this fallopian tube at the part lacerated was an inch and a half in diameter. Its parietes were thicker there than in other parts, and most especially where the placenta was attached. The fœtus was about an inch in length. The case is illustrated by a very interesting engraving. Mémoires de l'Académie Roy. des Sciences, tom. pour 1702, p. 208.

In the American Magazine, in 1746, is related the history of a woman who carried an extra-uterine fœtus from 1731 to 1745; during which period she had six full-grown children. "In three weeks from her last parturition, there was an opening in the tumour near the navel, from which matter was discharged to the amount of about eight ounces a day for three months, when a portion of the head of a child was discovered, and some small bones were extracted. An incision was then made, and the rest of the bones were removed at different periods in four days, when the wound was stitched up. She died soon after, and on dissection it was ascertained that the fœtus had been located in the fallopian tube, which was found greatly distended and adherent to the peritoneum." The right tube and the uterus were in a healthy state. Medic. and Physical Journal, vol. xxxv. p. 281.

A fallopian-tube gestation, with ossification of the cyst. The patient considered herself pregnant, and within a week or two of her full period of gestation, when she was seized with severe abdominal pains, which endured for a fortnight, and destroyed her. On inspecting the body after death, the fact just

stated of the fœtation cyst formed by development of the right fallopian tube being ossified was discovered. Com. by M. Chambry De la Boulaye. Journ. de Méd. etc. tom. xviii. p. 69.

A case of fallopian-tube fœtation. The pregnancy commenced towards the end of June 1763. The fœtus was supposed to have died in January 1764. In May of the same year, the patient had pretty well recovered from the shock which her health had sustained at the beginning of the year. In August 1772, she was attacked with a severe fever, and died on the seventh day of the disease, which, it should be observed, had been accompanied by very excruciating pains of the groins and hypogastrium. On opening the body after death, a cyst was found communicating with the uterus by the right fallopian tube, which enclosed both that tube and its corresponding ovary, and which contained a fœtus of seven months growth, in a state of putrefaction. The death of the mother was indeed ascribed by M. Haller, the reporter of the case, more to the decayed state of the extra-uterine cyst and its contents, than to the fever by which the patient, as it would seem in the first instance, had been attacked, independently of the local affection. Hist. de l'Acad. Roy. etc. pour l'an 1773, p. 21.

The case next to be noticed is remarkable for the first positive recognition of the fact which it furnishes, that a decidua is secreted by the internal surface of the uterus, contemporaneously with the first evolution of the ovum in the fœtation cyst; and under circumstances rendering any communication between the ovarium and the uterine cavity impossible.

Last winter, Dr. Hunter met with a very singular case of a conception in the fallopian tube. In consequence of one of the tubes having burst, an internal hæmorrhage had ensued, which occasioned the death of the woman. He showed the parts to his pupils. The uterus was enlarged nearly as much as it would have been at the period at which the woman died, had the conception been in it; and the membrana decidua was distinctly seen lining the fundus uteri. He observed, that this case confirmed two opinions which he had before entertained concerning the gravid uterus. It showed that the enlargement of the impregnated uterus does not happen mechanically, from the increasing bulk of its contents. It showed, likewise, that the decidua, or outer stratum of the secundines, belong to the uterus, and not to the ovum, or that part of the conception which is brought from the ovarium." Medical Commentaries, vol. i. part 4, 2nd edit. p. 429. London, 1784.

The subject of the case next to be noticed, after experiencing a variety of distressing symptoms, died about the end of the second month of gestation. M. Delangle, physician at Berney, opened the body, and found a considerable effusion of blood into the abdominal cavity. The fallopian tube of the left side was lacerated along its length to the extent of about an inch and a half. Within this lacerated portion of the cyst were to be seen a placenta and a fœtus, of about two months' gestation. Journal de Méd. etc. par Corvisart, tom. xvi. p. 286.

A case of a double pregnancy; one uterine, and the other in the right fallopian tube. It appears, from the well-narrated account given of this case, that the two fœtations were contemporaneous, until the contents of the uterus, a dead child and its appendages, were expelled in the eighth month of gestation. That child measured seventeen inches in length. The patient, however, did not then recover. On the contrary, the distressing symptoms which before that event had tormented her, viz., severe abdominal pains, sickness and vomitings, faintings, tension of the abdomen, etc., continued to harass her from day to day, until they ultimately destroyed her. That result occurred in three months after the birth of her uterine child. On examination of her abdomen after death, of which the fulness of the right side had never subsided after her delivery, as already stated, a child of twelve inches in length was found within a cyst, of which the parietes were those of the right fallopian tube distended. The cyst had given way in one place; and some fœtal bones were about to escape from it. The surfaces of the abdominal viscera were found mutually adherent, and otherwise diseased, in many places. The internal coat of the vena cava was of a vivid red colour. Abridged from an address delivered to the female pupils of the Maternité, by M. Chaussier. Journal de Médecine etc., par Corvisart, tom. xxiv. p. 415.

Account of an extra-uterine conception, extracted from a letter written by T. Bland, M.D., of Blandford, in Virginia, to W. Shippen, M.D., of Pensylvania. The subject was a negro woman, between thirty and forty years of age, who had been afflicted for eighteen months with a tumour on the right side of the hypogastric region, in which, about five or six months after its appearance, she felt a motion which she thought was that of a child. The author saw her about four months before her death, and gave it as his opinion that she was too weak to suffer the operation of extirpation without great danger. On opening the body, the right ovarium was found much enlarged, and adhering to the peritoneum, colon, etc. It contained the bones of a fœtus of four months' gestation, and some putrid fetid matter: the fœtation cyst was gangrened. Com. by Mr. Smith, of Barton. Medical Commentaries, dec. ii. vol. i. p. 334.

A case of an extra-uterine fœtus, partly voided through an abscess in the abdomen. It was an instance of a left fallopian-tube gestation. The fœtus was retained from the beginning of the year 1795 until November 1798, when a great discharge took place at the navel of the woman, and caused her death. A part of the fœtus had been discharged through the abscess. The case is given at some length, as also the appearances on dissection. Com. by Mr. John Major Wilson, surgeon to the Westminster Hospital. Annals of Medicine, vol. iv. p. 401.

A case of an extra-uterine fœtus. The patient was twenty-three years of age, and had miscarried in a former pregnancy. She became pregnant about April 1785, and after a great deal of suffering, she was released from the fœtus by its being discharged through an opening at the navel in January 1787. Simmons' Medic. Journal, vol. viii. p. 147.

A case of fallopian-tube gestation: event fatal: period of gestation not stated: the ovum found in a cyst on the left side of the abdomen, blended with a portion of the omentum. The uterus was in a natural state. The dilated part of the fallopian tube from which the ovum had escaped was within an inch of the cyst of lymph and omentum within which it was found. The skin and cellular membrane of the child were converted into a substance like adipocere, or in the language of the reporter of the case, they were similar to the fat of dead bodies found in the Cemetery of the Innocents, except that in the analysis they did not afford ammonia. Com. by M. Lacroix, Rapport Général des Travaux de la Société Philomatique de Paris, tom. i. p. 156. 1798.

A case, purporting to be one of a possible variety of supra-fœtation, that is, of a conception occurring some months after the death and subsequent retention in utero of a fœtus conceived some months previously. The death of the produce of the first conception was supposed to have taken place between the sixth and seventh month of gestation. From the following account of a part of the post-mortem examination, the whole of which furnishes evidence that it was conducted most unsatisfactorily, the author feels disposed to consider the case as one of extra-uterine gestation; but of what species there is no adequate proof furnished. "On cutting through the peritoneal lining, we found the hard substance, of which the patient had so long complained, TO BE THE UTERUS, of about the size of a calf's bladder when distended with air. It was perfectly green from putrefaction. Wishing to remove it entire if possible, as the substance was exceedingly thin, we were particularly cautious; yet, with all possible attention, its cavity was broken into; whence issued about a pint or more of thick matter, of the consistence of molasses, and of the colour of strong beer grounds; in which was a fœtus of six or seven months' gestation." Now this same patient had given birth to another child at the full period of gestation, by the natural passage, the vagina. How therefore could the uterus be so very thin as here represented? The body containing the fœtus was most probably an extra-uterine cyst, of which the reporter failed to ascertain the constituency. Com. by T. Hope. Lond. Med. and Physic. Journal. vol. vi. p. 360.

In the Massachusett's Medical Communications, vol. i. pt. 3, p. 30, is an interesting account of an extra-uterine case, which continued more than seventeen years, during which time the woman had four children and several abortions. She died in 1802, when it appeared, on examination, that the uterus and right fallopian tube were in a sound state. The left tube was greatly enlarged, and was found to contain the bones of a full-grown fœtus.

A case of left fallopian tube gestation. The rupture of the tube, and the consequent death of the patient, occurred, as the reporter of the case supposed, about the end of the fourth month of her gestation. The quantity of blood effused into the abdominal cavity in this case appears to have been very great. "We discovered that the unusual distention of the abdomen arose from a

large quantity of blood, now in a coagulated state, which had escaped into it, and which was so diffused over the containing viscera that they were concealed from our view. "I had removed nearly two wash-hand basins full, when I observed an umbilical cord imbedded in coagulum. The part of the left fallopian tube intermediate between its ruptured cyst and the uterus was found imperforate." This narrative is drawn up with great simplicity, and a good understanding of the subject. Com. by Mr. Tucker, of Exeter. Medic. and Physic. Jour. vol. xxix. p. 448.

A tediously narrated case of a fallopian-tube fœtation, rendered fatal from rupture of the distended tube when the cyst had acquired the length of two inches.There was a substance like decidua attaching to the interior surface of the cyst, and again a tissue of the same character lining the internal surface of the whole body of the uterus. Com. by Dr. Lobstein, of the Civil Hospital at Strasburgh, and extracted from a French Journal. Republished by the Editors of the London Medic. and Physic. Journal, vol. xxxvii. p. 195.

A case of extra-uterine fœtation the facts of which are very analogous, in some of its circumstances, to those of Mr. Tucker's case just quoted. The history of the case during life is given with sufficient minuteness. The patient was thirty years of age. She had been previously three times pregnant. She was in good health when she conceived for the fourth time in December 1813. The symptoms peculiarly indicative of extra-uterine gestation are then detailed. On the 30th of May 1814 the patient was admitted into the Maternité of Paris, and thirty hours after her admission she died.

Dissection.—Water was found in the chest and pericardium. On opening the abdomen and intestines, which adhered together at every point of contact, and were in a gangrenous state, they were found to conceal a large, soft, and oval tumour, arising from the left side of the pelvis, and occupying the left hypogastric region. On endeavouring to raise the intestinal mass, and to detach it from the adhesions it had formed with different portions of the tumour, the latter was ruptured at its anterior part, and a fœtus escaped with a large quantity of yellowish fluid. The cyst containing the fluid proved to be the left fallopian tube. The walls were thin, but very vascular. The placenta, attached to the inner surface of the cyst, was broad and thin. When detached, the membrana decidua of Dr. Hunter was very distinct, AND A SIMILAR MEMBRANE WAS DISCOVERED IN THE UTERUS ITSELF. Com. by M. Chaussier to the Editors of the Journ. de Médecine of Paris for May 1814, and thence reported in the London Medical and Physical Journal, vol. xxxii. p. 459.

A fatal case of fœtation of the right fallopian tube, about the end of the fourth month of gestation. There was a decidua lining the cavity of the uterus, but one of more than ordinary tenuity and softness. There was also some placental tissue within the cyst, and presenting at the ruptured part. But there was no decidua, as often happens, lining the greater part of its parietes. The case is exceedingly tediously reported. Com. by Dr. Lobstein, of Strasburgh, and

copied from a French Journal into the Lond. Medic. and Physical Journal, vol. xxxvii. p. 195.

A case of fallopian-tube fœtation. The fruit of conception was borne in the right fallopian tube for upwards of three years, whence it was afterwards discharged by the way of the rectum. The patient died. Journ. de Médecine, etc. tom. lxvii. p. 575.

Case of fallopian-tube gestation. Com. by Jos. Gerson, Comment. de Reb. vol. xxix. p. 84.

A case of fallopian tube which occurred to a young married woman, who lived in Swallow Street, near Carnaby Market. The early symptoms are given with apparent accuracy, but the post-mortem examination is of little value. The uterus, it is stated, was found in its natural state; but externally, on its left, there was discovered a small female fœtus, but not distinctly featured and of a sodden appearance, as if it had been boiled. The left fallopian tube was enlarged, much elongated, and callous at its extremities. This case is authenticated by Mr. Perfect. See that writer's Cases in Midwifery, vol. ii. pp. 164, 175.

At an advanced period of her gestation the subject of another case experienced symptoms similar to those of labour, with the addition of their having been accompanied by a profuse discharge of blood. The ordinary process for voiding by the rectum the extra-uterine fœtus in successive portions was instituted, but failed in its execution; the patient died. The fœtation cyst is said to have been formed by an enlargement of the broad ligament. Com. by M. Bergeret, Recueil Périodique, etc. tom. xiv. p. 289.

A tediously narrated case of a fallopian-tube fœtation which was borne about three years after the patient had arrived at her full period of gestation. The cyst was identified with an extension of the left fallopian tube. Com. by M. Bouquet. Recueil Périodique de la Société de Santé, tom. xiii. p. 65.

A married woman, aged five-and-thirty, died when she was three months gone with child, under circumstances which excited suspicions that her husband had poisoned her. The body was ordered by the magistracy to be duly examined. No trace of any effects of poison were to be found in any part of the alimentary passage. The small pelvis was filled with coagulated blood: the left fallopian tube was formed into a tumour two inches long and nine lines broad: this was ruptured, and presenting between the edges of the wound a quantity of flocculent tissue, which was recognised as placental. Beyond this and on its removal a diaphanous membranous body, containing an embryo, came into view. The uterus was rather longer and more spongy than in its ordinary unimpregnated state: its internal surface was lined with a soft pulpy tunic: the left ovary had a corpus luteum, and the right many vesicles filled with a transparent lymph. Com. by Dr. Lobstein, of Strasburgh. Another case of a left fallopian-tube gestation of about the same period is communicated by Dr. Lobstein and published in the same vehicle with the foregoing. In the

post-mortem examination of the latter, Dr. L. could not discover within the ruptured cyst any adherent tissue which bore the character of decidua. A decidua on the other hand was seen lining the uterine cavity, which however was one of great tenuity and softness. Extracted from one of the Bulletins of the Société Médicale d'Emulation. Journ. de Méd. etc. par Leroux, tom. xxvi. p. 222.

An Inaugural Dissertation on Extra-uterine Gestation, by André Bry, of Angers, pp. 72. This essay may be recommended as one of the best treatises extant on the subject on which it treats. Paris, 1808.

A case of gestation of the left fallopian tube, where the fœtus remained for two years, and whence the bones were eventually discharged by the anus; translated from a memoir in Italian, by Messrs. Valero and Roagna. The patient recovered her health. Journal Général de Médecine, tom. xli. p. 230.

A woman, of about thirty years of age, was attacked with a slight dysentery, which yielded without difficulty to soothing medicines. In about six weeks afterwards she was suddenly seized with a violent colic, accompanied by much prostration of strength, and great alteration in the features of the countenance. Her abdomen was a little more bulky than natural, but was not tender to the touch. She expired after the lapse of some hours. On opening the body a fœtus was found in the cavity of the abdomen, which was seen to have been developed in one of the fallopian tubes, whence it had escaped by a rupture of about two inches in length. Nouveau Journ. de Médecine, tom. i. p. 100.

A case of fallopian-tube gestation which proved quickly FATAL. "Dr. Recamier some time since reported to one of the medical societies of Paris several examples of aberrations of this nature, among which was the following. He was consulted by a woman of thirty-six years of age, suffering from slight dysentery, which readily yielded to sedative remedies. Six weeks afterwards his patient was suddenly seized with a violent colic, prostration of strength, and DECOMPOSITION of the features. In short she was dying when Dr. Recamier first saw her. She expired in a few hours. On dissection there was found in the abdominal cavity, among the intestinal convolutions, a fœtus, which, having been developed in one of the fallopian tubes, had escaped by a rupture of about two inches in length, the borders of which were still bloody. Bulletin de l'Athénée de Médecine de Paris. Bibliothèque Médicale, tom. lviii. Medic. Rép. vol. xi. p. 254.

To the above cases the author may add a brief account of a fallopian-tube gestation which occurred a few years ago in his own practice, as one of the physicians to the Maternity Charity. The subject of it was one of the junior midwives to that institution. She was advanced in a somewhat dubious gestation about thirteen weeks, when she was suddenly attacked with violent pains of the iliac region, for which she was bled freely, blistered repeatedly, and in other respects treated vigorously, with a view to the abatement of her extreme sufferings. She died in about a week from the commencement of her

indisposition. On inspecting the body after death, which duty was performed by Mr. Hind, at that time the Curator of the Anatomical Museum of the University, all the pelvic viscera, including the uterus, ovaries, fallopian tubes, and the greater part of the bladder, were found matted together, and concealed under a quantity of coagulated blood. On carefully removing the coagulum piece by piece, it was discovered that the right fallopian tube was the seat of the mischief. The several parts were removed, and, with the consent of the friends, placed in the Museum of the University. The cyst is seen to contain a mass of parenchymatous substance, of the size of what the placenta ought to have been at the thirteenth or fourteenth week of gestation; having inserted upon its disk the umbilical cord, which is seen to connect it with the fœtus at the navel. The fœtus so connected is floating at some distance from the other parts of the preparation. The uterus is laid open by a longitudinal incision to show the decidua, which may be observed in great abundance to line the internal surface of that organ. A similar appearance, of a highly flocculent decidua, may be seen in an uterus connected with a fœtation of a fallopian tube in another preparation in the University, of the history of which however the author does not know the particulars.

Of Abdominal Gestations.—True ventral fœtation takes place when the fecundated ovum, instead of being conducted into the uterus by means of the fallopian tube, is found precipitated into the cavity of the abdomen, and is there developed. In this case the womb, the ovary, and the fallopian tubes, are or may be in a healthy state, and the placenta becomes attached to the intestines, to the mesentery, to the stomach, or to any part or viscus covered with peritoneum. This phenomenon, which affords to physiologists much matter for reflection, is scarcely to be doubted as to the fact; although there are but few cases which can be quoted as unequivocal examples of it. Courtial's case, of Thoulouse, already noticed as described by P. Massuet, Lugd. Batav. 1719, was, in all probability, an example of ventral pregnancy. Massuet's language cannot be readily mistaken. "It lay with its head downwards, contiguous to the lumbar vertebræ of the spine, and occupied three-fourths of the abdomen in length; the feet being situated under the stomach and colon, whilst the rest of the body was covered with omentum. The umbilical cord was round the neck; and the whole of the body had escaped out of the membranes. It was a male fœtus, well formed, and at its full period of gestation. The placenta was adhering to the lower part of the stomach, to a portion of the colon, and to the gastro-epiploïc vessels. The whole external surface of the uterus, as well as its interior, were quite whole, as were also the tubes and the ovaria. Dr. Bayle, and several other medical gentlemen, were witnesses of the facts now described." But Sachs's case, described in the Leipsic Miscellanies as early as 1670, observ. cx. p. 224, was also given, without any theory to support it, as an instance of abdominal

pregnancy; as were likewise two cases reported by Dionis; of which one had occurred in 1681, and the other in 1696. Dionis's Anatomy, pp. 292 and 339. The two following cases, which were first produced in proof of ventral conception, must be considered as resting on doubtful evidence.

A case of voiding of bones by the anus, after a previous disease of the organs within the pelvis, of twenty-five years' duration. On inspecting the body after death, a STEATOMATOUS ABSCESS was found between the uterus and the rectum. Com. by Dr. Petr. Rivalliez. Act. Eruditor. an. 1682. Lipsiæ, p. 219.

A case of extra-uterine gestation, purporting to be one of ventral pregnancy. The subject was a poor woman, who was admitted into the Hôtel Dieu, in order to be confined there. After sustaining violent pains about the navel and lower parts of the abdomen, which were greatly exasperated, as was believed, by the motions of the child, she died undelivered. On inspecting the body, a child was found in the posterior chamber of the pelvis. The only intelligible fact in the pathological history of this case seems to be, that the uterus was unimpregnated, and the vagina was in a healthy state. The ovum and its connexions had the appearance of having been in a diseased condition even before the patient's death. Com. by M. Saviard. Lowther's Abridgment of the Phil. Transact. vol. iii. p. 118.

A woman ceased to be regular, and was the subject of vomitings and colics, which nothing could subdue. Her abdomen swelled from day to day, and she felt as if something alive was moving and struggling within it. At the end of about five months of suffering, she became the victim of painful affections still more acute and distressing; after which period, however, she no longer felt the movements of the supposed living child. The vomitings and diarrhœa, which were incessant, continued for six months longer, when the patient died. The body was inspected after death. M. Martin, the reporter of the case, made a puncture into the abdomen, by which there was discharged from that cavity a prodigious quantity of a thin reddish fluid. In the progress of the examination there came into view a child of nine months' growth, which seemed to have occupied nearly the whole of the right side of the abdomen. The head of the fœtus abutted against the lower surfaces of the liver, which it compressed into a cubic figure. Its nose lay upon the gall-bladder, and the occiput upon the pylorus. The umbilical cord was only eight inches long, and it parted in the ordinary way from the placenta; which, by an infinite number of branches and fibres, was found attached to the first, second, and third lumbar vertebræ. The intestines of the mother were found, with the exception of the colon, on the left side of the abdomen: the uterus and the fallopian tubes were in a healthy state. The child, although dead, was in a state of preservation, having sustained no decomposition from its having been immersed in its water; which, of course, in this remarkable case, must be identified with an hydropic effusion into the abdomen of the mother. Com. by M. Martin, jun., surgeon. Hist. de l'Acad. Roy. des Sciences pour l'an 1716, p. 27.

A case of ventral gestation, as stated by its reporter, although no proof is offered in favour of that assumption. At four fingers' breadth from the crista of the right ilium, where a hardness, as if bony, was discovered, a longitudinal incision, five inches in length, was made; and the vertex of a child's head immediately came into view. The child was speedily extracted, without any loss of blood or laceration. The period of this gestation had exceeded that of natural pregnancy by about three weeks. The patient had sustained no pains like those of labour pains. "The placenta was flaccid and discoloured, and adhered to the mesentery, to the fallopian tube of the same side, and slightly to the omentum, but very strongly to the left ovarium." The patient died on the fortieth day after the operation. Com. by Anth. Gualandris. Comment. de Reb. etc. vol. xxxv. p. 289.

A case of extra-uterine fœtation at the full period, complicated with an irreducible crural hernia. "I spent twenty-four hours in fruitless attempts to reduce it, and then proceeded to operate. The operation was so far successful that, immediately after the protruded intestine was set at liberty from its strangulating adhesions, and moderate pressure was applied with the finger and thumb, in the usual manner, the tumour retired into the abdominal cavity, and instantly disappeared. The pains were removed, and the patient felt comparatively well. This state of improvement lasted for three days; at the expiration of which period, however, all the bad symptoms returned, and in twenty-four hours the patient expired in convulsions. The fœtation cyst was found lying transversely along the abdominal cavity, the head of the fœtus having passed through a lacerated aperture in it, and entered the left hypochondrium, whilst the feet were seen to occupy the left lumbar region. From the very imperfect description given of the connexions of this cyst, no opportunity is afforded of judging of its specific locality. Com. by M. Martin, sen., Chirurg. en Chef de l'Hospice des Veillards et Orphelins de la Charité de Lyon. Recueil des Actes de la Société de Lyon, pour l'an 1798, p. 225.

A case of extra-uterine fœtation, which, if we may judge from the pompous and most tedious description given of it, was probably an example of ventral gestation. The patient became the subject of severe symptoms, at the full period of natural gestation, which gradually subsided; after which the patient's breasts became distended and painful, and a copious secretion of milk took place. Moreover, the movements of the child ceased to be felt. The patient appeared to rally for about a month, when her medical attendant was summoned to her again. Amongst other symptoms, there were then present pains like those of a colic, a disposition to syncope, a spontaneous vomiting, and occasionally some hiccough. It was now determined, in consultation, to perform the operation of gastrotomy. An incision, of about four inches in length, was made on the external side of the rectus muscle, into the right side of the abdominal cavity. The instrument penetrated into the head of a fœtus, which seemed to have been emptied of its contents. Both the head and the

body were speedily and pretty easily withdrawn through the wound. The patient died in about four-and-twenty hours afterwards. The cyst, which had contained the extra-uterine ovum, was found extending from the fundus of the womb to very near the diaphragm. It measured transversely nearly a foot. This cyst having been detached, the intestines were seen to be in a sound state, as were also the other viscera. No trace of a rupture could be found in the uterus. Not a word is added about either ovary or fallopian tube. The patient was attended by MM. Plaignard and Masleurat, physicians, and by M. Dubois, a surgeon. The operation was performed by MM. Plaignard and Masleurat. Journal de Médecine etc., par Corvisart, tom. xxii. p. 437.

"In July 1813, Mrs. P. presented herself to the physician of a public charity for relief under a violent diarrhœa of long standing, attended by considerable pain in the abdomen and general emaciation. In a few days afterwards she died. Having always supposed herself pregnant, contrary to the opinion of her friends, she had expressed a wish that her body should be opened after death to ascertain the fact. Upon opening the abdomen in the usual manner, there appeared in that cavity evident marks of long-continued inflammation. The peritoneum lining the abdominal muscles was closely and pretty generally adherent to the omentum and intestines, particularly at the lower part and on the left side. The omentum, in some respects changed from its natural appearance, was darker coloured and looser in its texture. From its general adhesion it could not be reflected upwards; but with little difficulty it was separated from the parts underneath; and this separation exposed a cavity containing numerous bones of a well-grown fœtus in a very putrid state lying huddled together, but separate from each other. The bones being removed from their situation, and the cyst containing them being cleared out, it was found that the posterior parietes of the cyst were formed of the colon, mesentery, and neighbouring parts, and that its anterior parietes were composed of the omentum and the adhesions of peritoneum lining the abdominal muscles. The extremity of the left fallopian tube was lost in the general mass, and at that point where the cyst was united to the colon, absorption or destruction of a portion of that intestine had taken place, so that an opening into the cyst and out of it to the colon was apparent. The size of the bones determined the fœtus to have reached the sixth or seventh month. The uterus itself was not the least enlarged: the os uteri and the whole of its surface had a healthy appearance, as had likewise the ovaries and the right fallopian tube." A number of additional and very interesting circumstances are given by the reporter of the above case, which would appear to entitle it to the careful perusal of such members of the profession as may possess or may have ready access to the original registry of it. Com. by Dr. Ramsbotham, Medic. and Physic. Journ. vol. xxx. p. 318.

A case of extra-uterine gestation, described as an example of ventral gestation, which was imputed to the influence of a sudden and powerful im-

pression of a painful nature made on the patient's mind during the moment of consummation of the sexual act. The fœtus had arrived at the size of one of six months' growth. The first pains which the patient had sustained were referred to the left iliac region. From a thesis by Dr. Lallemand, Journal Général de Médecine, vol. ii. p. 319.

Of Extra-Uterine Gestation of Uncertain Locality.—On perusing the published records of cases of this class, it will be found that they have occurred more numerously than those of any of the preceding, with the exception of fallopian tube gestations. This has arisen principally from two causes; viz. first, from want of ability, on the part of the earlier reporters of such cases, accurately to ascertain their localities and attachments; and, secondly, and at later periods, from want of opportunities to examine the parts concerned, by reason of the eventual recovery of a large proportion of women who had been well-ascertained subjects of extra-uterine conceptions. From the excess of fallopian-tube gestations over every other variety of extra-uterine pregnancies, of which the localities have been distinctly ascertained, it is obvious to remark that a great number of those cases which we are happily under the necessity of placing under our present class of unknown locality, might be considered as principally the consequences of early rupture of cysts of these tubes. This induction would appear to admit of probable confirmation by a perusal of several of the following references.

A case of nine years' pregnancy, of the escape of a putrid extra-uterine fœtus by an abscess which pointed in the vicinity of the navel, and of subsequent recovery of the patient, with a perfect cicatrization of the wound. Com. by D. Salomon Reifelius. Ephem. Germ. dec. iii. an. 3. 1693. p. 24.

A case of twin extra-uterine gestation of eight years' duration, which eventually destroyed its subject. The pregnancy is stated to have proceeded to its full period before any unusual suspicion arose. At length the fœtus ceased to move, and the milk in the mammæ gradually diminished in quantity until there was none whatever left. After the extinction of all hope of a child, a moveable tumour was found to remain in the abdomen. The patient however recovered a good state of health; and lived seven years afterwards without sustaining any inconvenience excepting from the bulk of the tumour. At length violent pains in the abdomen supervened, and destroyed her. The precise situation of this extra-uterine gestation appears not to have been ascertained. There were however discovered two distinct cysts, each containing a fully evolved fœtus. There was experienced no particular inconvenience nor disturbance, nothing like the pains of labour, at the natural period of uterine gestation, i. e. at the end of nine months after the commencement of the pregnancy. Ephem. Germ. dec. iii. an. 4. p. 168. Lipsiæ, 1697.

A case of extra-uterine gestation, in which the bones of the fœtus were voided by the anus some years after conception. The subject of the case was about

thirty years of age when she conceived. Her pregnancy proceeded as usual, and the time of her labour arrived. The ordinary pains supervened, but went away again without producing any delivery, the abdomen still remaining large. About a year and a half afterwards the patient began to discharge bones by the anus, and continued so to void them for about an equal period of time, in such great abundance as to induce the suspicion that she must have been pregnant with triplets. At length the abscess healed; but in consequence of riding on a rough trotting horse the ulcer was re-opened, and the patient died. Com. by Dr. Ch. Morley, Lowther's Abridgment of the Transact. of the Roy. Society, vol. iii. p. 223.

A case in which the bones of a fœtus were voided by an abscess in the groin, by Sir P. Skippon. "I lately visited a woman sixty years old in Drury-lane, who had an unproductive pregnancy twenty-eight years ago. She bore two children after that time. About eight years since an impostume broke out in the right inguen, whence several bones of a dead child were expelled. She has even now a great swelling in the same groin, and feels something very hard in it, which she suspects to be bones." Jones's Abridgment of the Trans. of the Roy. Soc. vol. v. p. 306.

A case of extra-uterine pregnancy of forty-three years' duration. Anne Mullerin, a native of Leinzell, a village in the Duchy of Wirtemberg, a woman of a meagre and dry constitution, but at the same time of cheerful disposition and enjoying good health, became the subject, AT THE AGE OF FORTY-EIGHT, of all the symptoms of pregnancy. She was at length taken with pains similar to the pains of labour, which lasted seven weeks, without however terminating in delivery. In a short time afterwards she visited the baths of Aalen, and in a great measure recovered her health; but without experiencing any perceptible reduction in the size of the abdomen, which indeed never afterwards subsided: but on the other hand it never acquired any accession of magnitude, nor was productive of any other inconvenience than what arose from its great weight. With this enlarged abdomen she was twice the subject of uterine gestations, and bore subsequently two children that did well. She became a widow when she was fifty-one years of age, and survived her husband forty years, during the whole of which time she never ceased to consider herself pregnant. In the year 1720, when labouring under the disease which destroyed her, she intimated a wish that her body might be inspected after death, as she felt a great anxiety that it should be known what the peculiarity of her pregnancy had actually consisted in. The surgeon of the village performed this duty with very little dexterity and precaution. He found, within the cavity of the abdomen, a large mass like the bowl used in the game of nine-pins, without observing accurately where it had been situated: and as this globular body was very hard, he opened it with the stroke of an axe. The above account was transmitted to the Academie Royale des Sciences through M. Boulduc.

As an appendage to the above account a member of the academy sub-

joined the following statement. "M. Camerez, Professor of Medicine at Tubingen, from whom a letter on this subject is in possession of the academy, examined with great care the mass in question, in the state in which it was when it came from the hands of the surgeon. It has not been touched since, because it was an object to preserve it in the state in which it is for the cabinet of the Duke of Wirtemberg. It contains a fœtus, of which the greater part of the superior half is visible; the rest is concealed. The head is greatly distorted, and the chest much flattened. It has no bad smell. Its envelope is cartilaginous or even osseous, excepting at the part where it was attached to some portion of the abdominal surface, where it appeared to have been connected by a thick carneous tissue of a bright red colour. The famous fœtation of Thoulouse, which was borne only twenty-seven years, yields greatly to this." Hist. de l'Acad. Royal des Sciences pour 1721, p. 33.

An example of two extra-uterine fœtations conceived at different periods by the same woman. The narrative of this most remarkable case is extremely interesting. It was communicated by Dr. Gabriel King, of Armagh, to the Editors of the Medical Essays and Observations, vol. v. p. 362. Edin. 1752.

The description of the case next to be noticed, makes it doubtful whether it was originally one of ovarian or of fallopian-tube gestation. Its subject, some time after having sustained symptoms which she had attributed to a miscarriage, supposed herself to be again pregnant; and, under these circumstances, was seized with violent pains of her abdomen and back. Mr. Gifford, in passing up his fingers, found the os tincæ at least two inches above the pubes, occasioned, as he supposed, by some presenting body, which he felt bearing strongly upon the posterior walling of the vagina. In about eighteen days afterwards, the midwife brought away a fœtus by the arms; but could not complete the business. Mr. Gifford was consulted, passed two fingers into the rectum, and brought away the placenta. There was subsequently a large discharge of grumous blood and of other substances by the same outlet. The case terminated fatally. On dissection it was found that "the right ovary, together with the ligamentum latum, was dilated into a large sacculus of an irregular form, in which were found part of the placenta and the remains of the membranes." It would seem not at all improbable that these remains of membranes might have been decidual. The fact of decidual tissue being to be found lining fallopian-tube cysts had not been ascertained in the time of Gifford. Gifford's Cases in Midwifery, published by Hody, p. 375.

The case of a woman who voided from her uterus portions of bones of different sizes. The subject was nineteen years of age. When she had been married about ten months, she was taken with labour pains; and after four days of great suffering was delivered with extreme difficulty without the aid of instruments. After that labour she remained subject to the misery of not being able to retain her water. Three years subsequently to the period in question, her case became an object of additional interest, from her passing at different times pieces of bone from

the uterus. The first seven pieces which were thus voided were of the size of the index finger, and the eighth of about the size of a pullet's egg. All of them were rough and carious. The patient voided also pieces of flesh, mixed with a reddish fluid discharge, and some urine. This case was communicated in 1758. The poor woman was then alive, but exceedingly wretched, and had arrived at the age of thirty-three. Com. by M. de Villers, Journal de Médecine, etc. tom. viii. p. 352.

A case of extra-uterine fœtation, exceedingly well reported by Mr. John Bard, a surgeon at New York, communicated by Dr. Fothergill. Mrs. Hagg, aged twenty-nine, had had one child without being the subject of any untoward symptom. She imagined herself pregnant again: and when, according to her reckoning, she had arrived at the full period of her gestation, she had pains resembling those of labour, unaccompanied by the escape of the waters, or by any other discharge. No child was born. There remained however a large hard indolent moveable tumour, inclining a little to the right side of the abdomen. The patient had a return of her menses, which continued regular for five months, conceived again, and enjoyed better health. The swelling of the abdomen became more equal and uniform; and at the end of nine months, after a short and easy labour, she was delivered of a healthy child. The tumour on the right side presented again the same appearance as before her last pregnancy. Five days after her delivery she was seized with a violent fever, accompanied by a purging, suppression of the lochia, pain in the tumour, and profuse fœtid sweats. By careful treatment these threatening symptoms were in some measure removed; but there still remained a loss of appetite, slow hectic fever, night sweats, and a diarrhœa. An incision was eventually made into the tumour, and a fœtus was extracted of the common size at the ordinary time of delivery. New York, December 25, 1759. Medical Observations and Inquiries, vol. ii. p. 373.

A case of twenty-nine months' gestation. In the eighth month, the patient was seized with violent abdominal pains, resembling the pains of labour. The orifice of the uterus was closed; but a great discharge of waters took place, without however being followed by the birth of a child. After the lapse of twenty-two months from this period, the patient took a journey of nine miles on horseback. After having rode about the half of this distance, on a very rough-trotting horse, she was seized with violent pains of the right hypochondrium, and was convinced that she felt something give way within her. On the following day she sustained a discharge from the genitals. This discharge, which lasted for a fortnight, was so exceedingly offensive that it was scarcely possible to support the odour of it. At this time she had to endure intense pain from a tumour which was formed at the umbilicus, of about the size of a man's fist. In the centre of this tumour a small ulcer pretty quickly presented itself; and by an examination with a probe it was discovered to communicate with a lodgement of fœtal bones. At length, piece after piece,

the whole skeleton of a fœtus was extracted from the wound. The patient eventually recovered her health perfectly, with the exception of one remarkable feature in her case, viz. that she ever after menstruated at the navel; from which circumstance the reporter infers the probability that the case had originally been one of rupture of the uterus. Com. by M. de la Vergne, Journ. de Méd. etc. tom. xiv. p. 443.

A highly interesting post-mortem report of a case of extra-uterine gestation, communicated by Dr. Charles Kelly in 1763. Dr. Kelly was consulted in this case by Dr. Crawford. The gestation was at its full period. The head of the fœtus was found situated in the posterior chamber of the pelvis. Time was not allowed to determine whether the fœtus had been in a cyst of the fallopian tube or not. The reporter of the case gives several reasons for his own opinion that it had not. The placenta was very large in proportion to the size of the child, and adhered to the peritoneum on the right side of the abdomen, extending from the umbilicus to the ileum. Its posterior edge adhered to a part of the mesentery, and its inferior part was attached to the broad ligament on the right side of the uterus, whence it extended upwards towards the ribs. The woman appears to have died in a state of exhaustion; and there was reason to believe that the child died at the same time. It seemed probable that delivery might have been effected in this case by making a sufficient incision in the vagina. The reporter, indeed, states that "the child might by such a procedure have been easily extracted: and it is probable," he adds, "that the placenta would in time have disengaged itself, and procured an exit through the same opening. But how soon, or how well, the aperture might have closed so as to have prevented a dangerous descent of the intestines, mere conjecture cannot determine."

The bones of a three-months' extra-uterine fœtation voided by the anus, and subsequent recovery of the patient. Com. by J. P. Voigt, Comment. de Reb. etc. vol. xi. p. 532.

A case of extra-uterine fœtation, in which the placenta remained attached to the fundus of the uterus, communicating with the umbilical cord through an aperture in the uterus; the fœtus being in a cyst by itself, and perfectly extra-uterine. It is doubtful whether the fœtus in this case ever was within the uterus; yet the aperture in the uterus would seem rather to favour that conclusion. It is upon the whole as puzzling a case as it is interesting. Com. by Mr. William Hey, of Leeds, to Dr. William Hunter. Medical Observations and Enquiries, vol. iii. p. 341.

A case of extra-uterine gestation, of which the cyst made a communication with the rectum, by which route the fœtus was partly voided, but principally withdrawn by means of a pair of stone forceps. The more interesting part of the case is the following description of the surgery which was made available for its relief. "When I examined the state of that part, I discovered very far within the rectum an aperture through the intestine leading to the right side of the pelvis, where the aperture was most obvious, and where I discovered many

small bones, which I then supposed must have been those of an extra-uterine fœtus. With a pair of forceps used in lithotomy these were extracted ; but the bones of the head being too large, I broke them to pieces before I attempted to extract them. In two hours, I had removed all that remained of the entire skeleton excepting one of the parietal bones, which was so firmly embraced as to render the extraction very difficult. As the patient was much fatigued by what was already done, I waited two days before I took away this bone. Nothing further remarkable happened after the operation, excepting that a large quantity of mucous matter was discharged with the stools ; but this in a short time decreased, and then ceased entirely. Within a short time the diarrhœa abated, and in about six weeks the patient was able to return to her usual employment, and is now perfectly well." Drawn up by Mr. Cammel, of Bungay, Suffolk, and communicated to the Editor by Dr. Denman. Simmons's Medical Journal, vol. v. p. 396.

" Alsey Penmear, a poor woman belonging to a neighbouring parish, after having been pregnant FOR THREE YEARS, discovered a large tumour in the neighbourhood of her navel, which, in the act of jumping over a hedge, burst open, and continued to discharge from to time, during a period of twelve months, the bones of a half-grown fœtus, without occasioning any material injury to her health ; after which the wound completely healed, and the patient continued to enjoy a good state of health. In about three years after the healing of the above wound, a tumour again appeared in the same part of the abdomen, gradually increased in volume, and in six weeks, in consequence of some exertion, burst, and about a yard of intestine came out through a very small aperture. A few days afterwards I was requested to visit her, and found the intestine greatly inflated, dry on the surface, and in a gangrenous state, owing to the violent strangulation at the wound. From the symptoms which attended, viz. constant vomiting of fæces, hiccup, shiverings, and a weak fluttering pulse, I expected that a very short time would put an end to her miserable existence. But in this I was greatly mistaken, inasmuch as she survived twelve days after I saw her ; and nature was sufficient to throw off the gangrenous piece of intestine close to the wound, through which her fæces were discharged during a day or two before her death." Com. by Mr. Richard Mayle, surgeon at Mazarion, in Cornwall. Simmons's Medical Journal, vol. vi. p. 52.

A case of extra-uterine gestation, which at the patient's death was become a ventral one. The cyst was found adherent to the peritoneum, lining the anterior parietes of the abdomen. The child was of about seven months' growth. No clew is given by which the constituency, or even the precise locality, of the cyst can now be ascertained. The whole case is indeed reported very loosely and unsatisfactorily. Com. by Dr. Ramsay, New York Medic. Repository, vol. vii. p. 221.

Case of extra-uterine gestation, of which the locality must be considered uncertain. The final event is unknown, inasmuch as the ordinary process of

expelling the fœtal bones by ulceration, by the way of the rectum, was not completed when the case was drawn up. The patient had then survived three years. The bones of the head still remained in the abdominal cavity. But the patient began to improve in her health shortly after the commencement of the process. "She soon became regular, her appetite returned, her cough and night-sweats disappeared, and at the time of drawing up the case, independently of some local trifling inconvenience, enjoying very good health." Com. by Mr. Kelson, of Sevenoaks, Lond. Med. and Ph. Journal, vol. xi. p. 293.

An account of a fœtus found in the abdomen of a woman of eighty-three years of age. The subject of the case was the widow of a Prussian officer, who had attended in several campaigns in the capacity of a sutler in Frederick the Second's, King of Prussia's army. She was admitted into the Lazarus Hospital at Dresden in 1794, and was there maintained through charity on account of her great age until she died in 1805. On opening her body after death the young surgeon, on whom that duty devolved, was not a little surprised to find within the abdominal cavity a child in an indurated state, and as it were blended with the intestines. Com. by J. Grivel, Obstetrician to the Hospital of Villeneuve at Dresden, in a letter to the late Dr. Geo. Pearson. Edinb. Med. and Surg. Jour. vol. ii. p. 19.

A case of trifling value. The patient died in the ninth month of her gestation. But as to the constituency of the cyst, and what might have been its connexions, it would seem impossible to make out, and, by the crude description given of the post-mortem examination. Journ. Générale de Méd. etc. tom. xxvii. p. 302.

A case of extra-uterine gestation of more than two years' duration, which eventually terminated in recovery. At different periods, and during the greater part of the pregnancy, the patient experienced symptoms of intense severity. In about the twenty-sixth or twenty-seventh month after conception there came away by the fundament a very great quantity of vermilion-coloured blood, with the most remarkable relief from her previous suffering. On the morning of the following day she voided an equal quantity of the same fluid, and in the evening a third quantity, which brought away with it a fœtal bone. Two days afterwards there was discharged by the anus a quantity of a black fœtid matter. This latter discharge ceased in nine days; after which there came away at different periods many bones which were evidently parts of a fœtal skeleton. The occipital bone was withdrawn from the anus by the gentleman who attended the patient as her surgeon, who afterwards by degrees in the same manner relieved her of all the remaining bones of the skeleton. After these simple and successful operations the patient's pains subsided, and in a short time subsequently she is stated to have recovered a perfect state of health. From the size of the fœtal bones it was inferred that the fœtus had ceased to live at six months' gestation. Extracted from the Bulletin des Sciences Médicales for November 1809. See Corvisart's Journal de Médecine, tom. xviii. p. 389.

A case of extra-uterine gestation, and its subsequent evacuation at an early period of its growth by the rectum. Journal de Médecine etc. par Corvisart, tom. xx. p. 74.

A case of extra-uterine gestation of several years' continuance, the subject of it in the mean time giving birth successively to three living children. About a fortnight after the birth of the third child, in February 1815, she began to suffer great pain and inconvenience from a tumour which she had borne since 1807, and which had occupied principally the right side of the abdomen. The reporter of the case gives, in full detail, the symptoms which more immediately preceded the eventual result of his extraordinary history. "On the 21st of June, 1815," he observes, "the bowels were in a good state, but the tumour was more troublesome; and there was a small red spot near the navel. In the evening of the 24th, a large quantity of matter, which was so offensive that the family was obliged to leave the room, was discharged from that part. On the following morning I made a particular examination. The discharge, which had been copious through the night, was more fœtid than any thing I had ever noticed. The opening was but just sufficient to admit a probe, and I distinctly felt bones about an inch and a half from the surface. In the afternoon the patient was visited by Dr. Thomas Welsh, and the next morning by Dr. John C. Warren; both of whom confirmed my opinion of bones being to be felt. On the 27th, a consultation with the above gentlemen, together with Drs. David Townsend, Abraham R. Thompson, and William J. Walker, when it was unanimously agreed upon that the only method by which the patient could obtain relief, would be an attempt to remove the remains of a fœtus, which we supposed was situated in a sac, formed by an enlargement of the right fallopian tube, adhering to the peritoneum. I resorted to this hazardous and uncertain remedy in the presence of the above gentlemen, by enlarging the orifice sufficiently to introduce my left fore-finger; which, serving as a director, enabled me to dilate the wound in the direction of the linea alba to such a size as might enable me to extract the child, the body of which had been full grown, and seemed to be doubled. The pelvis, which was first extracted, and the spine and ribs, were not disconnected; and there remained a portion of the integuments and viscera, which were too much decayed and offensive to dissect. The bones of the head followed in different portions, which, with those of the extremities, were removed by repeatedly introducing the hand. The hæmorrhage during the operation was inconsiderable, and the wound was dressed superficially, without any attempt being made to unite its edges." A detailed account is given of the treatment of the case during the first week after the operation, which it is not necessary here to record. "I continued," he then proceeds, "to dress the wound daily until the 20th; after which it was only dressed every second or third day, the quantity of matter being very small. From this period the wound began to cicatrize; and at the date of this communication it is so nearly healed that it only discharges a small quantity of lymph. The patient has rode out, visited her

neighbours, and is in better health than during any part of the last eight years. It should have been observed that I frequently injected warm water into the wound, and used alcohol freely over the dressings, which had a good effect in cleansing and strengthening the parts." Com. by Dr. Josiah Bartlet, of Charlestown. New England Journal, and copied into the Lond. Med. and Physic. Journal, vol. xxxv. p. 278.

1818. "A lady aged thirty exhibited symptoms of pregnancy in Nov. 1816, accompanied by violent pains in the hypogastrium and the lower part of the pelvis posteriorly. These pains returned with great severity in December. In January the functions of the bladder and rectum were extremely impeded. An immoveable tumour was found to occupy nearly the whole of the pelvis; the orifice of the uterus presenting in front of it, immediately behind the pubis. On the 23rd of the same month the vaginal tumour was sensibly increased; and it descended below the level of the os tincæ, which was large, open, dry, immoveable, and continuous with the anterior part of the tumour. From this period forward till the month of May, when no decisive change had taken place, the pain and other distressing symptoms continued rather to increase than to abate in severity. Dr. Delisle was now summoned to attend his patient in her supposed labour. A cyst, as large as an egg, containing water, was found to protrude through the vulva. The midwife was in attendance. The woman was in bed, very feeble and emaciated, with a dry cough, tight respiration, small pulse, dry burning skin, and flushed cheeks. The tumour presenting at the vulva proved to be the cervix uteri, with part of the body tumefied and elongated. Its orifice was slightly open. It descended in a direction from left to right. The orifice of the urethra was turned upwards. The reduction of these parts was readily effected; but they again prolapsed on the slightest effort. Near the orifice of the vagina and through its parietes, a hard, round, and somewhat unequal tumour could be felt to occupy the whole cavity of the pelvis, and to present pretty distinctly the characters of one side of the thorax of a fœtus. Convinced of the existence of an extra-uterine fœtus, Dr. Delisle felt himself called upon to adopt strong measures, and determined to make AN INCISION THROUGH THE VAGINA at the most prominent part of the tumour. This was effected in a crucial form by a bistouri introduced between two fingers. "A quantity of water, with a few drops of blood, escaped from the opening, which was gradually dilated; and the left side of the thorax was found presenting. Both feet were disengaged, the one after the other: the head followed with some difficulty; and thus a living female fœtus was extracted. It was well formed, but diminutive; and seemed to be the product of a six or seven months' pregnancy. The pulsation in the funis was very weak. The eyes were open. The limbs moved freely about; but the infant's cry was feeble and plaintive. In about fifteen minutes after the delivery the mother sustained an inconsiderable hæmorrhage, while her pulse gradually sank, and her respiration became oppressed, and death took place after about a quarter of an

hour's struggle, without any recurrence of the hæmorrhage. The infant died in a few minutes afterwards." It might seem harsh to offer much criticism on the treatment of a case so truly formidable. It is well known that extensive incisions have been made through the posterior walling of the vagina, compatibly with the eventual recovery of the patient. The author is disposed to surmise that, added to the state of high phlogosis and contusion, which had probably existed for some days before the operation in the present case, there was too much extension, here called DILATION, used to warrant the expectation or even the hope that the wretched sufferer could long survive: for the description given of the force used to enlarge the wound, makes it probable that the extension obtained had been the result, at least principally, of laceration. It is moreover impossible to form a correct opinion of the amount of loss of blood which was sustained in the present case. Bulletin de la Société Médicale d'Emulation, Mai et Juin 1818.

A case of extra-uterine conception, treated successfully by INCISION OF THE VAGINA. The patient had been four days in labour; the pains continuing to return in the usual manner, but without being accompanied by the signs ordinarily attendant on the process of parturition. At length she became quite exhausted. Mr. King having ascertained that the case was one of extra-uterine gestation, determined on the following operation. It consisted in laying the vagina open to a great extent. "The head of the fœtus floated and vacillated on the right side of the uterus, and pushed it from its situation. I introduced a small bistouri, guarded by the end of my finger, as far as to prevent the laceration of the parts in the progress of delivery. I then pierced the vagina through, downwards and backwards, so as to ensure if possible an easy extraction of the child's head. The instant the vagina was laid open, the waters flowed abundantly; the membranes being laid open by the incision through the vagina. Having passed my hand through the wound, I found the fœtus very high up, and firmly fixed, without any prospect of its descending into the pelvis. I therefore desired my assistants to press gently and constantly upon the abdomen, and to imitate a circular bearing-down motion with their hands." The head now slowly descended into the pelvis, and Mr. King completed the extraction with the forceps. The child appeared to be still-born; but after inflating the lungs the operator found that "it had borne the brunt of the day without a fatal event." The hæmorrhage was inconsiderable from this LARGE incised wound. The infant was of the common size, and well-conditioned. The placenta was uncommonly small, and the cord very slender. On the morning of the day after the delivery the patient was copiously bled; when an anodyne was also administered to her. She was moreover desired to lie on an inclined plane, with her head very low. The bowels were kept torpid on purpose to avoid purging, until the danger of a hernial protrusion might be presumed to be over. At the end of four weeks Mr. King could not perceive any trace of incision in the vagina, and the uterus had resumed its natural position.

Med. and Chirurg. Journal, vol. ii. p. 132. Com. by John King, Esq., of South Carolina. Without intending any reflection on trans-atlantic histories, the author cannot help expressing his regret that the facts of the above narrative are left very insufficiently authenticated. This case was originally published in the New York Medical Repository, and also in a separate pamphlet by Mr. King, pp. 176.

1819. A post-mortem examination of a subject of DOUBLE PREGNANCY, one uterine and the other extra-uterine. The uterine fœtus was about five inches in length, and the other was nearly eight. The description of the extra-uterine tumour was found so much confounded with its connexions, that it was scarcely possible to determine positively the source of the ovum, which formed a part of it. It is one item of the account that the right fallopian tube was distended sufficiently to contain a small egg, and that on the side of the ovarium, there was a small unequal opening communicating with the extra-uterine cyst. The subject of the case had suddenly died from bursting of the cyst during violent efforts to vomit. Com. by M. Cliet of Lyons. Journal Gén. de Médecine, tom. lxvi. p. 241.

1819. A case of extra-uterine fœtation, probably of the right fallopian tube. The cyst, which presented something of a placental character, appears to have been attached to a part of the fundus of the uterus, and adherent by peritoneum to the lumbar vertebræ and right iliac fossa. The actual facts of the case are made difficult to be understood by the prolixity and pomposity of the language in which they are presented to the reader. The patient died in the sixteenth month of her extra-uterine gestation. The fœtus, a female, had acquired a growth of nineteen inches in length. Journ. Complement. du Dict. de Sc. Médic. tom. vi. p. 259.

The author is indebted for the following interesting case to the kindness of Mr. Flexman, of South Malton, Devonshire. "Mrs. Mary Cock, aged forty-one, the mother of seven children, became again pregnant in the year 1817, and expected to be confined about the latter end of that year. On the 1st of January 1818 I was sent for to attend her. On my arrival about midnight I found her in bed; having had some severe pains, and likewise a sanguineous discharge from the vagina. After having waited some time in vain for the recurrence of pain, I made an examination; but could ascertain nothing from it, that I now recollect. I remained however with my patient during the night, but returned home in the morning. Several days elapsed without my hearing from her; and when I heard, I was informed that the pains had not recurred, that she was able to be out of bed, and that the secretion of milk from the breasts had taken place, as if she had been delivered. This secretion continued for the space of nine weeks; during which time she was employed about her household affairs as usual. About this time the catamenia returned; and the function continued subsequently to be regularly performed till the usual period for its final termination. The abdominal tumour remained stationary for several years; indeed till the commence-

ment of 1834, at which time the patient was alarmed by the discharge of a very offensive fluid from the vagina; which was so fœtid that it proved to be a great annoyance not only to herself but also to the whole family. At this period the constitution became affected, fever was excited, her rest and appetite were much impaired; consequently she became much emaciated. An injection with chloride of lime was used. Saline effervescents, with an anodyne at night, rendered her state as bearable as could be expected. About last June she became unusually alarmed from an idea that her bowels were mortified, as she expressed herself. Upon examination I found that an abscess was about to form in the region of the tumour, which was greatly inflamed, and presented a very irregular and hard feel. It occupied the umbilical region, and extended as high as half way between the umbilicus and ensiform cartilage, inclining to the right side. A poultice was applied to it, and in about a week it ulcerated. The opening was very small. I passed a probe into it; and was thus enabled to feel distinctly what I presumed to be fœtal bones. The aperture being extremely small, I introduced a piece of sponge into it, in order to dilate it. After a few days it would allow the introduction of a pair of forceps, with which I extracted a few of the bones. The bones of the head were obliged to be divided in situ with a pair of scissars, on account of their magnitude. At each dressing I injected a quantity of warm water, in order to cleanse the parts. This mode of treatment was continued for two months. At the end of three months not only were all the bones removed, but the patient's health was perfectly re-established. The sore is now rapidly healing." Jan. 23rd: the author has heard from Mr. Flexman, this morning, that the sore is now quite cicatrized.

To the above list may be added a case published in 1831 by Dr. Wagstaffe, of which the following are the principal facts. Its subject was Mrs. Rondeau, a married lady, about five-and-twenty years of age. She was suddenly seized with intense abdominal pains, which speedily terminated in her death. "On the appearance of the body, fourteen hours after death, the surface exhibited a completely blanched state, with fulness and tension of the abdomen. On cutting through the abdominal muscles, the peritoneal sac was found to be distended with four pounds and fourteen ounces of blood partially coagulated. While this was being cautiously removed, a fœtus was discovered in it of about seven or eight weeks' growth. No laceration appearing in the uterus, attention was naturally directed to the appendages of that viscus; when the part where the fœtus had escaped was manifested by the ragged placenta which hung from its situation in the left fallopian tube. This left no doubt as to the nature of the case. The parts were then removed; and on careful examination, it was ascertained that the fœtus had been contained in a sac formed by the left fallopian tube. This sac was equal in size to a pigeon's egg; and occupied two-thirds of the length of the tube nearest to the uterus. The remaining portion of the tube was of its natural size; and its fimbriated margin was free from obstruction. A probe passed along its canal, stopped abruptly at the commencement

of the dilatation, WHERE the placenta protruded: the distention of its sac increased to its centre, at which part it had given way, allowing the exit of the fœtus. The rupture is as large as the point of a finger; and through it a detached portion of the placenta hung into the abdominal cavity. The body of the uterus had enlarged to a size equal to that of the same viscus at a similar period of gestation: its walls were thickened, and its cavity lined by a recent deposit, evidently forming the decidua. A careful examination could not detect any rent in the peritoneal surface, nor was there the slightest mark of visceral disease."

In the foregoing sketch the author has referred to about ninety recorded cases of extra-uterine gestation, and it is very certain that many more have occurred which have never been recorded, and probably many recorded which he may not have had the means of referring to. The proportions of the several forms of extra-uterine gestations in the above list are as follows; viz., of ovarian, sixteen; of fallopian-tube gestations, about forty; of ventral pregnancies eight or nine, and of gestations, assumed or proved to have been extra-uterine, but of uncertain locality, about three or four and twenty.

All the examples of ovarian gestation terminated fatally, and the greater number at an early period. One had arrived at the fourth month and another, that of Forresterier's, at the sixth or seventh month of gestation.

Of about forty cases of fallopian tube pregnancies, four proved fatal to the mother between the seventh and the tenth week of gestation, six between the third and sixth months. One of six months terminated in the mother's recovery, partly perhaps by the good management of M. Littre: of two cases at seven months' gestation, one proved fatal at seven months, whilst the subject of the other survived for eight years: one case proved fatal at eight or nine months: one proved fatal to the mother when she had carried the ovum for eleven months: one in the eighteenth month: one of two years' gestation, after which the mother recovered and survived: three of three years' gestation, which then proved fatal to the mother: one of between six and seven years' gestation, which then proved fatal to the mother: one of survival of the mother for eight years, after the ovum had ceased to manifest any signs of life; and one of survival of the mother for fourteen and another for seventeen years, under similar circumstances. Dr. Wagstaffe's case, published in 1831, which was one of fallopian-tube gestation, ended fatally in the seventh or eighth week of gestation. Of the remainder, amounting nearly to a moiety of the entire number, the results were not known at the time when they were first reported, or were not sought by careful post-mortem examinations. The subjects of about one fourth of the whole number survived the full period of natural gestation.

All the cases of ventral gestation, which are not numerous, and of the existence of which as a special variety of extra-uterine pregnancy, some writers have expressed great doubts, have, without a single exception, terminated fatally

within the period of natural gestation, and the greater number within the earlier weeks.

Amongst the results of cases under our last division of extra-uterine conception, viz. that of uncertain locality, we have happily many examples of recovery after years of various affliction from the presence of extra-uterine cysts within the peritoneal cavity.

Of twenty-four cases which the author has met with in his reading, and which he found to require a place under the present division of his subject, the greater number of subjects survived the period of natural gestation. The following are briefly the facts of those cases as reported by their respective historians. 1. Recovery of the mother after nine years' gestation by the escape of an extra-uterine fœtus by an abscess which pointed in the neighbourhood of the navel. 2. Recovery after a twin extra-uterine gestation, for there were two extra-uterine cysts, and enjoyment of health for seven years subsequently to the cessation of life in the fœtal subjects. 3. Death after four years of extra-uterine gestation. The fatal event was supposed to have been hastened by riding a rough trotting-horse. 4. A case of extra-uterine pregnancy of forty-three years' duration. 5. A similar case, after twenty-eight years' gestation. The celebrated case of Thoulouse was one of twenty-seven years' gestation. 5. Two extra-uterine gestations, conceived at different dates, by the same woman. The narrative of this case is extremely interesting. Edinburgh Medic. Essays, vol. v. p. 362. Edin. 1752. 6. A case of survival for fourteen years. 7. A case of uterine gestation, which supervened on an extra-uterine pregnancy. 8. One of twenty-nine months' gestation. It eventually terminated in the recovery of the mother by a gradual extrusion of the fœtal bones without the assistance of art. 9. A case which proved fatal at the full period of gestation. It occurred in the practice of Drs. Crawford and Kelly. 10. A fatal case, perhaps originally of uterine gestation, but rendered extra-uterine by rupture of the womb. Com. by Mr. William Hey, of Leeds. Medic. Obs. and Enq. vol. iii. p. 341. 11. One survival for about six years. 12. A case of recovery. The fœtal bones were removed by the rectum by means of a pair of lithotomy forceps; but the bones of the head being too large, they were broken to pieces before any attempts were made to effect their extraction. 13. An American case, somewhat loosely reported. New York Medic. Rep. vol. vii. p. 221. 14. A case of which the final event was unknown when its history was drawn up, inasmuch as the process of expelling the fœtal bones by ulceration by way of the rectum was not then completed. 15. A fatal case in the ninth month of gestation. 16. A case of recovery by the extraction of the fœtal bones, which were bones of the size of those of a fœtus of six months' gestation. 17. A case unaccompanied by any intelligible account of its event. 18. A case of several years' extra-uterine gestation, the subject of it in the mean time giving birth successively to three living children. 19. A case which terminated fatally

without deriving any benefit from the interference of art. 20. Another of which the event was successful, IN CONSEQUENCE, as was believed, of a beneficial interference of art. 21. A case of which the issue was unknown when it was first reported, and when the patient was represented to be doing pretty well: several of the fœtal bones remained to be expelled. 22. A case of an almost sudden death in about the fourth month of a double gestation, of which one was uterine and the other extra-uterine. 23. A fatal case, of which the facts are rendered difficult to understand by the prolixity of their detail. The ovum was nearly at the full period of its development.

# CHAPTER XIV.

## OF PARTURITION.

On the consummation of the actions of gestation, pregnancy is followed by the process of parturition. The power employed by nature for the expulsion of the ovum, at whatever period it may be called into action, is essentially and principally an attribute of the womb itself, assisted, however, by other co-operating forces contributed by certain muscles of the chest and the abdomen. This expellent action of the uterus is capable of being exerted by it at any period of gestation, and is probably to be identified with the expellent contractions which the same organ employs to rid itself of morbid formations or deposits, of whatever kind, which it may adventitiously contain, such as molæ, uterine hydatids, etc. In natural gestation this power is ordinarily called into exertion after the lapse of forty weeks, subsequently to the date of conception; whilst its advent, at or about that period, would appear to depend upon the entire accomplishment of the developments of gravidity. For important purposes in the economy of the human female the expellent contractions of the uterus are ordinarily more or less painful; whilst the efforts required to effect the expulsion of a well-grown fœtus at the full period of gestation are so considerable as to have been abstractedly denominated LABOUR.

The incidents of parturition are so numerous, and the modes required for its management so different in different cases, that teachers of the art of midwifery have found it convenient to distribute its phenomena under separate heads, which they have designated CLASSES OF LABOURS. Such distributions, however, have not been always equally remarkable for their simplicity and utility.

The classification of labours to be adopted in the present work, is that which the author has for many years used in his public lectures; and by which the entire subject of parturition is distributed into NATURAL, PRETERNATURAL, COMPLEX, AND INSTRUMENTAL LABOURS. The two first classes are partly founded on the presentation of the fœtus at birth. All the labours under the first, requiring the head to be the presenting part; and all under the second, requiring other parts of the child to present at the commencement of labour.

The third class is that of complex labours. It obtains its designation from the fact of its cases being complicated by accessional circumstances calculated to embarrass the function of parturition, and to compromise its results; as, for example, by hemorrhage, convulsions, prolapsion of the umbilical cord, ruptures of the uterus, or of other tissues of the mother, etc.

The fourth class is that of instrumental labours, and includes all labours requiring the use of obstetric instruments for their completion.

## OF NATURAL LABOUR.

NATURAL LABOUR is an example of the process of child-birth in which the head of the fœtus must present, and nature shall be found competent to effect her intention without the assistance of art, and without compromising the life either of the mother or child. To these elements of what the author considers an adequate definition of natural labour, Dr. Denman adds the necessity of the labour being accomplished within the period of twenty-four hours. To this addition there is the obvious objection, that we constantly meet with labours which in every other respect might be considered natural, but which require more than twenty-four hours for their safe and prosperous accomplishment.

Labour is usually preceded by certain indications of its approach, technically called premonitory symptoms; which are, the occurrence of pains resembling those of labour at uncertain periods, but generally during the night; a perceptible diminution of the previous tension of the abdomen; a subsidence of the uterine tumour; and the accession of a cheerful state of the spirits.

Diminution of volume of the uterine tumour is probably the result of incipient contraction of the fundus and body of the womb, favoured no doubt by a contemporaneous relaxation of its neck and orifice. Of this actual reduction in the size of the uterus, the more proximate effect should be a perceptible diminution of the previous tension of the abdomen. The uterus is felt to occupy an inferior position in the abdominal cavity than it had occupied at any recent antecedent date, and the more protuberant part of the abdomen is observed even visibly to have subsided. These several circumstances, together with the comparative freedom from a painful sense of distention and oppression which accompanies them, may be deemed an adequate explanation of the improved spirits which are said so frequently to precede the more positive commencement of the process of parturition. As the pregnancy ripens towards its consummation, the neck and orifice of the womb become more and more relaxed and developed; insomuch that the incipient pains of the actual process of labour may in most cases be identified with some amount of dilatation of the uterine aperture. In the greater number of cases, the plug of strong and very adhesive mucus, with which nature closes up the mouth of

the womb during gestation, falls out and escapes amidst the relaxations and developments here spoken of: so that at a very early period after the institution of the first pains, the practitioner upon examination encounters an incipient dilatation of the orifice of the womb.

All CONSIDERABLE contractions of the uterus are probably more or less painful; whether instituted for the purposes of parturition or for any other. Hence the contractions of this organ during labour are commonly enough called the pains of labour. By a succession of these painful contractions of the fundus and body of the womb, the presenting part of the child is forcibly impelled towards its orifice; its neck and orifice being in the meantime endowed with the more passive attributes of gradual relaxation and development, in respondence and due proportion to the action of the propellent powers thus made to bear upon them.

In all cases of natural labours the head of the child, as has been already stated, is the presenting part. But the head may present in any position, relatively to given parts of the parietes of the brim of the pelvis. In a great majority of cases we may observe that the occipito-vertical part of the fœtal head corresponds at the commencement of labour with the anterior and left lateral portion of the superior aperture of the pelvis. With this position of the head, the fœtal extremities might be expected to occupy the right lateral and lumbo-dorsal districts of the abdomen of the mother. This position of the fœtal head has been made available by Baudelocque, and other French writers on obstetrics, as a basis for the distribution of the presenting part of the fœtal head in natural labours into six different positions. The position now described, being by far the most frequent, they assume as the first of their six positions. In their second the occipito-vertical part of the fœtal head is made to correspond with the anterior and RIGHT lateral portion of the brim of the pelvis at the commencement of labour. In the third, the vertex, or more correctly the occipito-vertical portion of the head, is made to correspond with the symphysis of the pubes. This position may be presumed to be greatly favoured, if not essentially determined, by a cordiform shape of the superior aperture of the pelvis. In these three first positions we may observe that the back of the child must have a general correspondence with the front of the abdomen, as it directly has when the head presents in the third position; and with the antero-lateral portions of the abdominal parietes, when it presents in the first and second. But in the remaining or three latter positions, the back of the child must have a general direction towards the back of the mother: seeing that in the fourth position we find the forehead of the child corresponding with the left antero-lateral portion of the brim of the pelvis, the occipito-vertical part of the head being then determined to the right sacro-iliac junction of the mother's pelvis; that in the fifth, the child's forehead bears the same relation to the left antero-lateral portion of the brim of the mother's pelvis; and that in the sixth and last, the forehead is found to correspond pretty exactly with the

symphysis of the pubis. Of these, the first is the ordinary position at the commencement of labour. As the orifice of the uterus becomes more dilated, and the head descends towards the middle of the cavity of the pelvis, the small fontanelle may be felt gradually to depart from the neighbourhood of the left acetabulum, and to incline more and more forwards towards the opening of the arch of the pubis; with which it is found to correspond in most cases very accurately, when the head is about to make its escape through the outlet of the passage.

The reader will here of course observe the proper distinction to be made between the presentation and the position of the child when it is about to engage in the parturient passage. The presentation is the part of the fœtus which is found to occupy the neck and orifice of the uterus and the brim of the pelvis first and foremost; whereas the position is the relation which the presenting part, be it the head or any other part of the child, has to given parts of the brim of the pelvis. At the commencement of the active process of labour, the orifice of the womb is usually found as high up as the brim of the pelvis, and situated at no great distance from the promontory of the sacrum. At that period, its position might in many cases be difficultly ascertained. Its aperture, however, even then, might be ascertained to have acquired a rounder form, in substitution for its previous transverse fissure bounded by an anterior and posterior labium. In the further detail of the process of parturition the several facts of the function will be noticed in connexion with the duties devolving upon the medical attendant.

Of the Duties incident to the Management of Natural Labour.—The greater number of these duties must be considered as obligatory in the treatment of, and applicable to, all forms of labour. The first to be mentioned, which is very rarely to be compromised, is to obey without delay the first summons to give our personal attendance when the patient is taken in labour. In all cases of an engagement to attend a patient in her confinement, a binding obligation to this effect is implied. The process of child-bearing, unlike most other natural functions, is subject in all cases to a liability to unforeseen dangers. The greater number of these dangers can be avoided, greatly mitigated, or remedied, by the presence and skilful management of a well-informed obstetric practitioner. The patient, by engaging the assistance of her medical attendant, to whom she gives her confidence, places her life under his protection. She does all in her power to purchase for herself an assurance of immunity from all perils. He is therefore morally bound to make good his part of the engagement. Many of the complications which endanger this process are incident to all its stages; whilst some, and here we may instance convulsions and hemorrhage, may occur at its very commencement, or even before the perfect consummation of pregnancy. In consideration of these notorious facts, the medical practitioner is bound to give his earliest

possible attendance, after the patient's message is received by him. A conscientious discharge of this duty may often involve him in many works of supererogation, and at the same time of great inconvenience to himself, by reason of their interference with his other engagements. Nevertheless, he is first bound to perform the duty, and afterwards to meet the consequences in the best way he may be able. But in the midst of multifarious professional engagements a practitioner may find it impossible to give his attendance on a case of labour IMMEDIATELY on being sent for, or he might not be accessible for hours to the most urgent demand for his services. In cases of this description his family or friends at home should always be left in possession of a preconcerted arrangement with one or more of his professional friends, to supply his place until he might return, or to perform the entire duty of a substitute in the event of his protracted absence. We may not desert one patient, if actually in labour, in order to attend another, although the one might be poor and the other in wealthy circumstances: clashings of this kind should be foreseen and adequately provided for. Two or more patients, residing at short distances in the same towns or villages, may often be very sufficiently attended by only one practitioner. As the tendency of a double undertaking of this kind would be to compromise an essential duty, it should be considered as the safest practice to have always IN READINESS, on such occasions, the kindly services of a competent auxiliary.

2. After the practitioner shall have arrived at the patient's residence, a speedy arrangement should be made for his being introduced to her. On some occasions of this kind, the monthly nurse is found inconveniently tenacious of the chief command, in which however she is destined to be superseded by the practitioner. This unavoidable invasion of the nurse's assumed privileges may always be effected by an easy good-tempered firmness on the part of the medical attendant without the necessity of losing much time. The latter being sent for on purpose to attend the patient in her labour, must accordingly have an early opportunity of knowing that the process of child-birth has actually begun, of which the nurse must be supposed to be entirely ignorant; she not professing any knowledge of midwifery. The ceremony of introduction into the parturient room is now much less formal than it used to be in former times. All that is at present required of an obstetric practitioner, when about to be introduced, is to approach his patient with perfect gentleness and good manners.

After a few observations on the common topics of the health of the family, the state of the weather, etc., there can be no difficulty in referring to the period of commencement of the patient's labour pains. This will furnish an easy and an early opportunity of suggesting the necessity of obtaining a more accurate knowledge of the fact of labour being present by examination per vaginam of the state of the function, and whether the child might be favourably SITUATED, or, in the language of the parturient room, whether it might be in the RIGHT WAY FOR THE WORLD. When this opportunity is sought for the first time, it

is often afforded with great timidity and reluctance. The best considerations which the practitioner can suggest for an early compliance, will be, that it is indispensably necessary; that it may be of great importance it should be made available at an early period of the labour; that it is rarely attended with any sensible amount of pain or inconvenience to the patient; and that when once submitted to, it may not be necessary to repeat it, probably for some time.

The most convenient position for the patient to be placed in for the performance of this duty, is that which is usually adopted in this country for the general purposes of child-birth, viz. that of lying obliquely across the bed, on the left side, with the knees considerably retracted.

The objects of examination per vaginam during labour, which is technically called TAKING OR TRYING A PAIN, is to ascertain the fact of labour; the kind of labour as to the presentation and position of the presenting part of the child in reference to the pelvis; and the conditions of the several tissues forming the constituencies and boundaries of the parturient passage.

We have therefore to examine first, in order to ascertain the fact of the patient being really and truly in labour. There are three or four good rules by which this fact may be ascertained with almost absolute certainty.

The propellent contractions of the body and fundus of the uterus, when labour is really instituted, have invariably the effect of speedily dislodging the mucous plug, which nature employs during gestation to close up the orifice of the uterus. In many cases indeed this body escapes during the preparatory changes which take place during the latter days of most gestations. So that when the more regular and active pains incident to the process are instituted, the numerous glands situated within the orifice of the womb are found to be furnishing an abundant secretion of a thick ropy mucus, which gives to the whole of the parturient passage the feel of being most amply lubricated. When this mucus therefore is very profuse, the practitioner may be well assured that the process of labour has actually commenced.

Another indication which may enable the medical attendant to come to the same conclusion, is the fact in such a case of a certain amount of development of the orifice of the uterus. The uterine aperture having acquired a circular form, its boundaries mutually receding from its centre so as to leave an intermediate diameter of about an inch or more, which may be distinctly felt by the examining finger, may be depended upon as a second evidence of the actual presence of the process of labour. The presenting part of the ovum may often be reached and distinctly felt by the finger during the latter days of gestation, when yet labour as an active process may not have declared itself: whilst the author has however never known dilatation of the uterine orifice to take place to the extent just stated, excepting in cases of actually incipient labour.

A third evidence of the fact of labour may be obtained from the characteristic bearing-down pains incident to the process of parturition. During every effort of the womb to effect the expulsion of its contents, the presenting portion of

the ovum is distinctly felt to be propelled downwards along the course of the parturient passage from the commencement to the termination of labour. This character of true labour is never, nor in any degree, to be recognised in cases of false alarms: but we may generally add to it the fact that the really parturient contractions of the womb are with few exceptions progressive both as to their frequency and efficiency. The first twinges are usually confined to the back, and are inconsiderable in their amount. In the progress of the labour they gradually extend to the front and lower parts of the abdomen, until at length they would appear to occupy the whole of the uterine tissues, which, either as agents or sentients, or both, could be supposed capable of being made parties to the general struggle.

The pains of actual labour are moreover periodical. They occur at intervals, which, during the earlier hours of the function, are of longer, but which during its latter stages are of much shorter, duration. The pains incident to false alarms on the other hand are exceedingly irregular, generally most violent at their commencement, more moderate in the sequel, very uncertain as to their duration, and rarely if ever accompanied by any dilatation of the mouth of the womb, or by the presence of any considerable quantity of mucus to lubricate the parturient passage. Hence the use of the terms false and spurious, to distinguish the pains of false alarms; whereas the epithets, short, small, true, strong, regular, lingering, bearing, bearing-down, violent, vehement, and thundering, are usually employed to characterize the truly parturient contractions of the womb.

There are, moreover, certain epithets in popular use which are employed to distinguish some other varieties of the function of child-bearing, as it occurs in ordinary practice; as for example, quick, slow, protracted, dry, wet, sleepy, sick, hard, laborious, etc. Quick labours are obviously those which are rapid in their progress, and soon over; whilst the slow, protracted, and the lingering, are those which are slow and tedious in their progress, and which occupy an unusually long period of time in their duration. Wet and dry labours are distinctions founded on the fact of the process being accompanied by the presence of much, or of a sparing quantity of mucus, or, as in other cases, by the presence or absence of a dribbling of the liquor amnii. The epithet sleepy is applied to labour in some cases metaphorically, to signify its want of activity or slowness of progress; but also very frequently, perhaps most frequently, to express literally the disposition of the patient to fall into a deep sleep during the intervals between her pains.

We examine secondly with a view to ascertain the states of the orifice of the uterus, as indications of the probable duration, incidents, and results of labour. If after a labour, for example, shall have existed many hours, and yet upon examination the orifice of the uterus should be found only very moderately dilated, it would generally be to be presumed that many hours more might be required to complete the process. Experience warrants the same inference when the

mouth of the womb continues rigid and hard to the feel for an unusually long time. The lips of the womb are sometimes very THICK and hard for many hours, which should be considered as upon the whole an unfavourable condition: whilst in other cases it is found thick, soft, and more succulent; and therefore indicative of a kindlier disposition of the parts, and a speedier termination of the labour. On some occasions we find the boundaries of the uterine aperture remarkably THIN, so thin as to be difficultly distinguished from the membranes of the ovum. In these cases we generally calculate upon an early consummation of the process. A wet labour, from the presence of an abundance of mucus, is usually a quick one; but if the moisture has a dribbling of the waters for its cause, there is at least an equal chance, nay more than an equal chance, that it might prove tedious. The orifice of the womb during the incipiency of its dilatation is usually felt to be very high up, as high up as the brim, and even higher in some cases than the brim of the pelvis. Unless this part therefore be distinctly reached by the examining finger, it is obvious that nothing very certain or positive can be predicated about it.

Next to the orifice of the womb, the vagina should be made the object of a careful examination. This passage is found in many cases greatly elongated at the full period of gestation: and in first labours, especially when these occur somewhat late in life, it often develops exceedingly slowly in its transverse diameters. When the head of the child passes very slowly through the orifice of the womb, its progress is usually equally slow through the entire course of the vagina; although we meet with occasional exceptions to this rule.

Having ascertained the conditions of the several soft parts forming the parietes of the parturient passage, it is a duty in all cases during our attendance on first labours to ascertain, with more or less accuracy, the several dimensions of the pelvis. It may often happen that an advanced stage of the labour may obviate the necessity of being very precise in the performance of this duty. Let it be supposed, for example, that the fœtal head shall have got deeply into the cavity of the pelvis, before the practitioner has the opportunity of making his first examination. At that period of the first stage of the labour, it is obvious that he could have no motive for taking any admeasurement of the diameters of the BRIM of the pelvis; for we must suppose that the head of the child would then have cleared the superior aperture. If again we suppose the perineal tumour formed, or rapidly forming; in that case there could be no motive for instituting any admeasurement of the OUTLET of the pelvis, inasmuch as any sensible protrusion of the perineum might be considered as a good evidence of a sufficiency of space at the inferior aperture. Again, there could be no occasion to be particular as to the admeasurement of any part of the pelvis of a female who might be known to have already given birth to one or more well-grown children; unless indeed there might be reason to apprehend lest subsequently she might have been the subject of some disease or fracture by which the dimensions of her pelvis might have sustained reduction. Moreover, in all

ordinary cases, where the general appearance of the subject is found to present no visible defect of size or symmetry, it is rarely the practice to seek an opportunity of ascertaining the dimensions of the pelvis until we are called upon to attend the patient in her FIRST confinement. Want of adequate space may then be discovered for the first time as affecting the brim of the pelvis. This may at any time consist with a general figure, which might easily pass for one apparently of good proportions. But if the fœtal head is found not to engage in the pelvis after somewhat more than an average duration of propellent contractions of the womb, its orifice in the meantime being extensively developed; it would become in such a case a matter of propriety, and even of necessity, to institute a careful examination of the dimensions of the brim of the pelvis. The author has long made up his mind that the hand is the best pelvimeter. In the case supposed, therefore, he would advise the admeasurement of the pelvis to be made by that instrument alone, as directed in pp. 21 and 22 of the present work.

Another object of examination per vaginam is to ascertain the KIND OF LABOUR in regard to the presentation, and also to the position of the presenting part in reference to the parietes of the pelvis. In natural labour it has already been seen that we have assumed the head of the child to be the presenting part. But the fact of the head being the presenting part should be duly ascertained. At the full period of gestation it would seem indeed difficult to conceive how the head should be mistaken for any other part. The author, however, has to state that he has often known presentations of other parts mistaken for that of the head. The head is to be distinguished without much difficulty by the extent of its osseous rotundity; by such inequalities of the presenting part as can only be furnished by fontanelles and sutures, which are characteristic of certain tracts of the fœtal head; and by the practitioner being able, in most cases, WITH A LITTLE MANAGEMENT AND PAINS-TAKING, to reach one ear of the child. To make out the fact of a head presentation is, as the author believes, always practicable. The principal cause of difficulty is an accumulation occasionally of blood in the presenting part, producing a bulky protrusion of integument beyond the actual parietes of the skull. In order in this case to make out his diagnosis beyond the possibility of doubt, the practitioner will have to carry his finger exteriorly to and BEYOND the circle of pressure occasioning the integumental protuberance; where, in the event of the head being the presenting part, he would be able to distinguish the characteristic attributes of the fœtal skull, viz. the co-existing osseousness and rotundity of the head exclusively. If we suppose that these characters of a presentation of the head could not be thus satisfactorily made out, a circumstance which the author cannot well conceive, it would then be necessary to pass the finger in a proper direction, and sufficiently high up, to feel one or both ears. This of course would be conclusive as to the presentation, and also with moderate attention to accuracy in the examination, of the position of the presenting part.

Presentations of the shoulders and the breech are the only others which it

can be supposed, might possibly be confounded with that of the head. But to each of those parts some portion of the spine is contiguous and within the reach of the examining finger. These parts moreover may be easily distinguished THE ONE FROM THE OTHER by the parts of the child that are respectively contiguous to them; as by the proximity of the head in the one case, and by that of the genitals and sulcus between the nates in the other. The upper and lower extremities are to be distinguished by the length of their digits and by the presence or absence of a heel. The knee and the elbow are to be distinguished by their different sizes, by the acuteness of the olecranon in the one case, by the roundness and extent of the knee in the other, and in each by the ready accessibleness of the hand or the foot, which in the greater number of cases might be easily ascertained. In one case of presentation of the breech of a male, the author found the fœtal scrotum so prodigiously enlarged that it had been mistaken for a polypus having its origin from the interior of the neck of the uterus. Had the supposed adventitious tumour been removed by excision, the consequence would doubtless have proved fatal to the child, and not a little discreditable to the practitioner. No operation could however be reasonably suggested; inasmuch as the presenting part made rapid progress without any interposition of art: but the true diagnosis of the case was not quite satisfactorily made out until after the breech was born.

It has been stated that some cases of presentation of the face have been whimsically enough mistaken for breech cases. In cases of face presentation, the cheeks are apt to become greatly swelled from the accumulation of venous blood in them, so as then to furnish something of resemblance to the prominence and tenseness of the nates in breech presentations. In face cases, although much distorted, some of the features may generally be tolerably well ascertained. The nose, mouth, and eyes, are so remarkable and mutually so related, as not easily to admit of being mistaken for any parts naturally appertaining to breech presentations. Moreover, within the aperture of the mouth, the finger could most assuredly distinguish the presence of gums, and possibly also that of the tongue and fauces.

The position of the head in natural labour may in most cases be determined by the locality of the small fontanelle. In the three first positions the small fontanelle will be found easily accessible to the examining finger, and occupying a locality not remote from the parietes of the pelvis anteriorly. In the three last positions, the large fontanelle will be found to correspond with the axis or central part of the presentation. Of course the forehead would then be found to correspond with the front of the pelvis. If by reason of great accumulation and protrusion of integuments, there should be much difficulty in ascertaining the localities relatively to the parietes of the pelvis, either of the fontanelles or of any of the sutures, it might then become necessary that the practitioner should introduce his finger sufficiently high into the passage to ascertain the situation and direction of the ear. The boundary of the helix,

and the sulcus between the helix and the head, are always directed towards the back of the child. This part of the examination could not well be dispensed with in cases requiring any deliberation as to the necessity of having recourse to the use of the forceps.

To ascertain the position of the child in breech presentations, there is little more to do than to ascertain accurately the situation, relatively to the parietes of the pelvis, of the presenting parts themselves. When the breech shall have made some little progress within the brim of the pelvis, the inferior or sacral part of the spine could be distinguished in such a manner as to leave little doubt of its identity. Suppose, then, that part to correspond with any of the anterior portions of the pelvis: the practitioner might of course reasonably conclude, that the face of the child was determined to the back of the mother, and consequently that the case might be expected to involve no great difficulty in its management.

On the other hand, should the genitals be found to correspond with the front of the pelvis, and the gluteal and sacral portions of the presenting part to abut against the sacrum of the mother, such a state of things would indicate an inconvenient position, a protracted labour, and a doubtful issue as to the life of the child.

In shoulder and arm presentations, the position of the child in the uterus may be ascertained, first, by making out the relative locality of the spine, some part of which no doubt could be reached by the examining finger; and secondly, by bringing down the corresponding hand. By this latter expedient the direction of the palm of the hand, being in correspondence with that of the face and front surface of the child generally, would obviously become a means of determining the point required.

Labours are usually distributed into certain marked stages of the process. As the function, however, is continuous, and without suspension from the moment of its commencement, the distribution of these stages must be considered as entirely arbitrary; which indeed is further proved by the fact, that different writers have distinguished for their stages, different periods and incidents of the labour. The author is disposed to consider the distribution into stages of Dr. Denman, as simple and practical as any that has been proposed. The first stage, according to this distribution, is made to include all the incidents of a labour from the commencement of the process to the ordinary period of the rupturing of the membranes. Now, the period of rupture of the membranes must be assumed to take place AFTER a full development of the orifice of the uterus, and also AFTER the head of the child shall have entered pretty deeply into the cavity of the pelvis. When the liquor amnii escapes under these circumstances, the first stage of the labour is said to have terminated, and the second to have begun. The incidents of the second stage are the further development of the parturient passage, including the required extension of the perineum and the birth of the child; and the objects

of the third stage are the expulsion or careful removal of the secundines. The duty incident to the management of the first stage is ordinarily little more than that of watching the progress of the labour. Examination during this period of the process is seldom required to be resorted to more than once. When the principal facts already enumerated shall have been once accurately ascertained, the further introduction of the finger will seldom be indicated, until the head shall have begun to make a bearing upon the perineum. In the author's practice, all violent extensions of the external orifice are considered unnecessary and improper, excepting indeed in cases of very rare and extraordinary rigidities of those parts. In the earlier periods of modern artificial midwifery, it was not an unfrequent practice to apply the same treatment of scooping, as it has been technically called, to the rigid orifice of the womb: but in the more judicious practice of the present day this procedure is happily almost altogether laid aside. In cases of more than ordinary rigidity of the parturient passage, the treatment by efficient, and, if necessary, by repeated bleeding, is much to be preferred to any violent or forcible manipulations. The practitioner may, in compliance with the prejudices even of weak or ignorant persons, find himself obliged sometimes to take a pain, as it is vulgarly expressed, when an examination per vaginam could in no way be expected to be of any essential service. In such a case his best policy might be to comply with the wishes of the party; but of course it should be in such a way as not to do mischief, nor in any way to compromise the safe and quiet interests of the labour.

When the head presents at the brim of the pelvis in the first position, i. e. with its small fontanelle directed to the left acetabulum, the vertex might be expected gradually to shift its position during its descent into the pelvic cavity from the acetabular region to the arch of the pelvis, thus performing a change of position equal to about one fifth or one sixth of a circle. Should this gradual change of locality not take place, the head would descend into the lower part of the pelvis in an inconvenient position, which would probably require to be rectified before it might be able to pass through the external orifice. A late eminent practitioner of this metropolis was much in the habit of claiming for himself an unusual degree of dexterity in giving the required direction to the head, during its descent into the pelvis, by means exclusively of the finger, so as to ensure the eventual correspondence of the vertex with the arch of the pubis, and consequently its easy escape from the pelvic cavity. When it is considered that a malposition of this kind is upon the whole a rare occurrence, it would seem harsh and scarcely allowable to dispute the correctness of the representation here referred to. The author must however observe that he has known cases in which HE could not, BY MEANS OF HIS FINGER ALONE, prevent the head from completing its descent in the inconvenient position here supposed. When any advantage can be secured by the attempt, there surely can be no objection to its being made. This duty, of

questionable value, is however nearly the whole of the assistance that a practitioner can extend to his patient during the first stage of natural labour.

The second stage commences with the escape of the waters. The average quantity of liquor amnii might be stated as amounting to about two-thirds of a pint. The whole or greater part of this fluid usually escapes at once and suddenly. But no quantity of it should be allowed to escape in such a way as to injure the bed, or even extensively to soil a single sheet; and this should be prevented by the application of soft absorbent napkins to the parts. Speedily after the escape of waters, this incident being accompanied by the circumstances required to be concurrent, according to Dr. Denman's distribution of the stages of natural labour, the head comes down into approximation with the outlet of the pelvis, so as gradually to cause pressure to be made upon the perineum. In some cases of first labours this pressure requires to be continued for many hours, before any great impression is made upon the perineum; and this effect takes place so unequally in different cases, that it is often impossible to predict the time, with any tolerable correctness, when it may sufficiently yield to admit of the completion of the birth. If the propellent powers of the uterus should be unduly and prematurely exerted, and the fœtal head be borne with a disproportionate force against the flooring of the pelvis, the perineum may thus be made to sustain a spontaneous laceration. Hence the protection of this important part becomes a duty of paramount attention in cases of unusually vigorous action of the parturient powers. The author believes that the accident of spontaneous rupture never takes place excepting under circumstances of want of due proportion between the propellent and the resisting powers. An accident therefore of this kind, viz. a perfectly spontaneous rupture of the perineum, never probably happens, excepting in a small proportion of rare and anomalous cases, in which we might fairly presume that nature does actually depart from her ORDINARY RULE OF PROCEDURE, THAT OF OBSERVING the safest and most cautious progressiveness in her efforts. If this fact be admitted, the proper assistance to be extended in such cases should be founded on the principle of counteracting the dangerous violence of the uterine throes, and of preventing the perineum from being exposed to the full amount of their impulse. This is to be done by opposing a firm and steady bearing to the head, when felt to be borne down too strongly against the perineum, and to be impelled by a vis a tergo disproportionate to our experience of the ordinary efforts of nature. In the performance of this duty, we accomplish our object most effectually, not by applying the palm of the hand to the perineal tumour, as erroneously directed by some writers; but more directly and dexterously, by opposing the whole of our modifying and resisting force by the application of the points of the fingers and thumb of the right hand to the presenting part of the fœtal head. The danger of rupture arises not from any extraordinary bulk of the head as is very often supposed, BUT GENERALLY, WITHOUT A DOUBT, if not always, from the suddenness and violence of the impulse which it makes against the peri-

neum. The duty of protection, therefore, must obviously consist in opposing a moderate resisting force to the inordinate violence of the natural efforts; or in other words, in compelling nature to observe those rules of caution and slow progressiveness on which she would seem to have founded her ordinary security.

In some few cases of unfavourable position of the fœtal head or of irregular form of the pelvis, it might indeed be necessary to apply the fingers of the left hand to the posterior part of the perineum and neighbourhood of the os coccygis; in order to guard against any sudden accident which otherwise might be there incurred. During the performance of this latter service it is scarcely necessary to intimate that a liberal use of napkins should be considered as indispensable.

After the head shall have been expelled, nature usually gives the patient a short respite from pain. Should any assistance be required during the next propellent effort of the uterus, its object generally should be to give a proper direction to the shoulders during their transit through the os externum. Of these, the shoulder already most inclined to the front of the pelvis should be made to occupy the arch of the pubis, whilst the other should be determined to the posterior fourchette.

The next pain might generally be expected to have the effect of disengaging both shoulders, and with very little assistance the whole of the superior extremities. The only assistance which could be allowed here, for none can be absolutely required, should be merely to pass up a finger into the bend of the elbow, in order, by the slightest traction, to bring down the hands; which should be brought down singly, the one after the other. This procedure might be expected in some degree to diminish the painful distention of the tissues forming the outlet of the passage, during the expulsion of the shoulders.

The shoulders and the whole of the superior extremities being disengaged, it most frequently happens that after one or more contractions of the uterus the birth is completed. But it is not very unfrequently the case that this effort is for a few minutes delayed. When this occurs the practitioner should not prematurely interfere; but rather allow nature to complete her work in her own way, and in her own best time. This cautious abstinence is supposed to leave the uterus better disposed, and more competent for a vigorous contraction, for the purpose of eventually expelling the placenta. When thus the whole of the child is born, we identify that result with the completion of the second stage of the labour.

During the few minutes of further respite from pain which is then afforded, we have to congratulate the mother on the happiness of the event, to ascertain and report the sex of the child, to answer cheerfully the questions which may be addressed to us at this time as to any marks or other ascertainable blemishes on the body of the infant, to change the patient's napkins, and to

prepare and encourage her for the trifling additional inconvenience which she has yet to sustain, and which she is frequently too much disposed to magnify.

After the entire expulsion of the child, the uterine contractions are usually suspended for about ten or twelve minutes. During this interval, the practitioner separates the infant from the mother by an intermediate section of the umbilical cord. In performing this duty he is careful to tie the cord firmly on each side of the section. Before however he proceeds to apply his ligatures he satisfies himself that the child's breathing is well established. The first ligature is to be applied at the distance of between two and three inches from the navel. This is of course intended to secure the child's circulation; and the material of the ligature should therefore be sufficiently strong to ensure that object, and sufficiently bulky not easily to make its way through the substance of the cord. The ligature should be drawn sufficiently tightly to prevent all chance of a subsequent loss of blood from the fœtal end of the cord. The reason for applying the ligature at the distance of two or three inches from the navel, is simply that ample room might be left for the application of another ligature, in the event of any untoward removal of the first. The second ligature is usually applied at the distance of about two inches from the first. The use of the second ligature is to guard against the loss of blood from the placental end of the cord. The tying of both ligatures is to be completed before the intermediate section of the cord is to be effected. It being a fact that the circulation of the mother is not continuous into that of the fœtal circulation, it is of course to be inferred, that no discharge of blood from the placental end of the bisected cord can have any part of the maternal circulation for its source. The practitioner therefore in ordinary cases ties that end of the cord merely to prevent any of the unappropriated blood, left in the umbilical vessels and in the placenta, from escaping, so as unnecessarily to injure the bed or to discomfort the patient. But in cases of twins, and other forms of plural births, there is a much stronger reason, or rather an indispensable necessity, for the application of two ligatures to the cord of the first-born child. This necessity is founded on the fact, that occasionally, in cases of duplicate or triplet gestations, the placental circulations of the several ova have been observed to intercommunicate. This fact is very well shown in our plate xxxi. which represents the placental mass of a triplet gestation, where one considerable bloodvessel, A VEIN, is seen to stretch along at least two thirds of the superior part of the drawing, so as distinctly to connect the trunk of the umbilical cord of the first placental mass with that of the third. The intercommunicating vessel ought to have been marked by a figure; but as it is the only vessel that is seen to take the course described, the reader will be at no loss to recognise it. The whole of the drawing gives a faithful idea of the principal vessels of the preparation from which it was taken. The preparation itself is to be seen in the obstetric department of the Museum of Anatomy of the

University. Now, if we suppose the cord of the first-born of these triplets to have been bisected, and the placental portion of it not to have been secured, it is obvious that the third child, or that to which belonged the placental portion represented on the right-hand side of the drawing, must have been exposed to instant death by hemorrhage from the unsecured portion of the umbical cord of the first child. The practice therefore of securing both portions of each umbilical cord, or of all in cases of more than duplicate gestations, is now become universal, and no doubt irreversibly established in this country.

But the umbilical cord may require more management than has yet been described. The navel-string is often observed to be coiled round the neck of the child. This may be supposed to happen in consequence of the vigorous movements of the child in utero, the cord in the mean time being sufficiently long to admit of such entanglement. There are two forms of this entanglement, which require to be managed somewhat differently. In the former, the cord is only coiled round the child's neck ONCE. If in this case it should happen to be long, the loop may be sufficiently enlarged to be set at liberty by being brought down over the head. If not long, on the other hand, this attempt would cause it to be put dangerously on the stretch; by which the uterus might be excited into spasmodic contraction, or the placenta prematurely separated from its attachment. This method of disentanglement should therefore be avoided, and substituted for one much simpler, and one not liable to either of these objections: it should be that of enlarging the loop investing the child's neck to a circle of merely sufficient diameter to admit of the shoulders being readily transmitted through it.

The second case is one in which the cord is supposed to be coiled round the child's neck more than once. It has occasionally been found so coiled three or four times; and there is no doubt that the child has thus been sometimes strangulated. The mode of management in a case of this kind is to pass two ligatures, at a little distance from each other, under the more accessible part of the cord, and then, after quickly tying both, to effect the section between them so as to give the opportunity of uncoiling the strangulating portions as soon as possible. This operation will, of course, be to be completed afterwards, by tying the cord again in the usual manner, at the distance of two or three inches from the navel. The child, if actually living, will speedily exhibit the usual manifestations of life. If not, the ordinary resources of the resuscitative process, hereafter to be detailed, must be resorted to.

After having separated the child from the mother, the practitioner will next have to determine his attention to the removal of the placenta. This is the principal object of the third stage of labour, and is or should be performed by nature herself, in the greater number of cases; it being as much within her province to accomplish, as any part of either of the preceding stages. In the course of a few minutes after the expulsion of the child, the uterus accordingly contracts again pretty strongly; by which it effects the disruption of the con-

necting vascular tissue between itself and the placenta: in consequence of which, every part of the latter is effectually separated from its surface of previous attachment, and allowed to sink by its own weight from the body of the womb, which it had before occupied, into the vagina, or at least towards the neck of the uterus itself; to be thence propelled by further uterine contractions, or to be withdrawn by the practitioner in the gentlest manner, by means of very moderate traction applied to the umbilical cord. In offering this trifling assistance, which however could seldom be considered as a matter of imperative necessity, the medical attendant will often find it convenient to carry the fingers of his right hand along the cord as far as the placenta, which he will sometimes find detained by its bulk at or above the brim of the pelvis, and to press it into a form better adapted for being transmitted through the vagina. With the placenta are often brought away portions of coagulated blood, which had been accidentally effused, when the after birth had been only recently or perhaps partially detached from the uterine surface. These loose coagula should be carefully removed, in common with all the accompaniments of the latter stage of the labour, in order to make good room for the application of two or three warm and dry napkins to the parts.

In withdrawing the placenta, it is usual for the practitioner to apply moderate pressure to the uterus, by means of his left hand, whilst the right is employed in drawing down the cord. In some cases the left hand is made use of to draw down the cord; whilst the fingers of the right hand are employed to mechanize the descent of the placenta by applying pressure to one side of it, as already described. After the removal of the placenta and its accompaniments, the whole of the labour, including the third stage, is said to be terminated.

With some members of our profession, it is a pretty general practice, after the business of the parturition is over, to encircle the patient's waist with a broad belt or bandage, for the several presumed purposes of reducing the abdominal protuberance, and of giving tone and firmness to the relaxed parietes. Provided no undue pressure be thus applied, for the uterus and its appendages in common with all its contiguous surfaces must be considered as being not in a condition to sustain any great amount of pressure, there can be no great objection to this practice; at the same time that its utility must be very limited, if not indeed in many cases rather questionable. For some of the earlier years of his practice, the author was induced to conform to this custom as one which he found generally established. But for the last fifteen or twenty years he has very rarely had recourse to it; excepting in cases of threatened hæmorrhage, in the treatment of which its use is often of indispensable importance.

The management of the placenta as now described is merely intended to exhibit the practice to be adopted in ordinary cases. The treatment of cases of its retention will be given hereafter among the varieties of complex labours.

Hitherto the author has strictly confined himself to the consideration of natural labour under its most favourable circumstances. He has reserved its more tedious and perplexing forms for some further remarks, which he now proceeds to offer under several subordinate and accessional heads of subjects, to be especially devoted to the consideration of protracted labours.

## OF LABOURS PROTRACTED BY DIVERSE, ACCIDENTAL, OR ACCESSIONAL CIRCUMSTANCES.

OF LABOURS RENDERED TEDIOUS BY RIGIDITIES OF THE SOFT PARTS.—This difficulty arises most frequently from patients becoming the subjects of the function of parturition, either precociously early, or at a comparatively late period of life. It seldom however occurs, in any great degree, until after the age of thirty. A merely slow dilatation of the orifice of the womb very rarely compromises the eventual safety of the case. Patience may perhaps be represented as the best natural remedy for this state of things; and the abstraction of blood, in a full quantity, as the most efficient measure of artificial treatment. Bleeding however is seldom ABSOLUTELY required, until after the orifice of the uterus shall have become completely developed, and the fœtal head shall have commenced its descent into the vaginal passage. As a difficult labour advances, there are occasions when the contractions of the uterus become progressively less powerful and efficient, until they might be expected to cease almost altogether. But in the greater number of cases of this description, the head descends slowly into the pelvis, and quite clears the orifice of the womb before it becomes finally arrested; for it often is arrested in its progress towards the outlet, if nothing be done to quicken and to invigorate the action of the uterus. Under these circumstances the author considers the abstraction of blood, in a sufficient quantity to reduce the accompanying phlogosis of the case, a measure of indispensable importance, WITH A VIEW TO THE PRESERVATION OF THE LIFE OF THE CHILD. The child's life is thus ensured by shortening the duration of the labour, an object which full bleeding has in a very remarkable manner the effect of promoting.

The practice of large bleedings is very much employed in the United States of America, as a prophylactic measure, to ensure for the patient an easy labour. It was probably first suggested with that view by the late Dr. Rush, in 1791, in his public lectures to the medical students of Philadelphia. See the Lond. Med. and Phys. Journ. vol. xx. p. 73. Dr. Dewees, Dr. Physic, and many other American practitioners of eminence, have since adopted the same principles, and greatly extended their application. In one very remarkable case of rigidity of the os uteri, accompanied by an additional contraction of the vagina in consequence of a former rupture of the perineum, Dr. Dewees took from his patient, by one operation, upwards of two quarts of blood! A healthy living

child was soon after extracted by the forceps. "The parts readily yielded without laceration; the woman had a rapid recovery, and the child was living and well" when the case was published. New York Medical Repository, 1796, vol. ii. p. 22.

The author can see no good reason for bleeding prospectively, or in mere anticipation of a possibility, which might or might not be realized by the event. To say the least of such a practice, it would appear to be an unnecessary encroachment upon the ordinary dispositions of nature in the affairs of a function, which she usually performs very safely and satisfactorily without any such interference. Bleeding, on the other hand, as a remedy or a corrective of an actually existing rigidity of the soft parts, whether or not accompanied by more than ordinary constitutional excitement, is a power of great and unquestionable value; and we are indebted to our transatlantic brethren for much useful discussion of the subject, and more especially for pioneering us through a wilderness of prejudices into a just estimate of the extent to which, in certain imperious circumstances, it may be safely carried. In cases of protracted labours from rigidity of the soft parts, and accompanied by much suffering, and great excitement of the heart and arteries, the author has often directed the abstraction of between thirty and forty ounces of blood with the most marked advantage. He is indeed perfectly well convinced, that, in cases of tediousness and difficulty, from the causes here supposed, this important measure, well timed, well applied to its objects, and judiciously combined with other useful means which it would be improper to neglect, will not unfrequently have the effect of superseding the necessity of using instruments, when otherwise their employment would become indispensable. Moreover, free bleeding may be considered as a power well calculated to bring certain cases of difficulty from extraordinary rigidity of the parts, within the reach of safe assistance by the forceps. Dr. Dewees's case, already quoted, is a striking example of its great importance and value in this point of view. The author could indeed refer to a variety of instances in his own practice, where it enabled him to apply the forceps with the most perfect success in all respects, many hours earlier than, without its adoption, it could have been safe even to make the attempt.

Of Labours rendered tedious by the Contractions of the Uterus being feeble or irregular.—Labours of this character are often sufficiently painful, and almost always exceedingly anxious. The proper treatment is to subdue the irritation, and to endeavour to improve the quality of the pains by the exhibition of moderate doses of opium. In the mean time the action of the bowels should not be allowed to become suspended. Attention should be paid to this function during the earliest stages of the labour, inasmuch as aperient medicines must be expected to produce very little effect, if exhibited after the descent of the head deeply into the pelvis.

Inertness or Deficient Activity of the uterus in a small but uncertain proportion of labours, has hitherto baffled all attempts to explain it on any

known principles of the function. These cases are especially to be treated by the exhibition of ergoted rye. The proper dose is about half a drachm of the powder, and proportional quantities of the infusion and tincture, given every ten minutes till the required effect shall be produced; the patient of course being supposed to be in actual labour.

The ergot of rye seems to have been first recognised in France as a quickener of slow labours: for a few years since it was very fully proved, by an ingenious author of that country, that so long ago as at an early period of the last century, it was popularly esteemed as a nostrum of potent efficacy in the town and neighbourhood of Lyons. See an able memoir on this subject by M. Desgranges, in the Nouveau Journ. de Méd. Chirurg. Pharm. etc. for January 1818, vol. i. p. 54. About two-and-twenty years ago, several American practitioners of character addressed the profession, in letters and other papers, strongly recommending the use of the ergot as a substance really possessing the power which empiricism had imputed to it. See the New York Medical Repository, vol. xi. p. 308, and vol. xii. p. 344. See also a Dissertation on the Natural History and Medicinal Effects of the Secale Cornutum, or Ergot, by Oliver Prescott, M.A. New York, 1813. The ordinary mode of exhibiting this drug in America is to infuse a scruple of the powder in an ounce and a half of hot water, and to administer a tablespoonful of the infusion every ten minutes.

In James's Dictionary, under the word Secale, it is stated that the barbed rye has been long known in Germany as a remedy for the immoderate discharge of the lochia. Its intoxicating and poisonous properties have also been recorded for upwards of a century in that country. Vide Ephem. Curios. Germanic. decad. iii. an. 3. obs. 133; necnon obs. 29. Dn. D. Johannis Christ. Bautzmanni de Secali temulente, decuria iii. an. 7, p. 52, 1699. In further illustration of certain deleterious properties possessed by the ergot, the reader may also consult an extract from a Report of the Société de Médecine of Lyons, published in a pamphlet at Lyons in 1818. "The great quantity of ergoted rye," the Reporter states, "which poisoned the crops of 1816, exposed the inhabitants of the country to the danger of gangrenous ergotism. During many months, the wards of the Hotel Dieu presented the deplorable spectacle of horrible mutilations produced by this gangrene; which put a termination to the most atrocious pains, only by effecting the entire separation of the affected limbs." See Nouveau Journal de Médecine, vol. ii. p. 244. For other bad effects of the ergot, see Mémoires de la Société Royale de Médecine, p. 303. Paris, 1779.

In consequence of some signal failures in the earlier periods of his trials of the use of the ergot in lingering labours, the author became a very tardy believer in its efficacy as a parturient medicine. At present, however, he entertains no doubt of its being possessed in this respect of considerable power.

Of Plethora as a cause of Protracted Labour.—This cause may be suspected to exist when a violent headach, not depending upon a morbid

condition of the stomach, supervenes in a few hours after the commencement of the labour. In the event of the parturient process proving tedious under these circumstances, free bleeding has been observed to induce a speedy and most striking change in its character.

Great excitement of the heart and arteries, occasioned by the violence and long duration of a labour, may be considered as being identified in its effects on the progress of labour with actual plethora. Abstraction of blood is accordingly its unquestionable remedy.

It has been asserted that labour has often been rendered tedious by certain passions of the mind. That protracted labours may have sometimes been accompanied by unhappy states of mind there can be no doubt; but the author is not sure, that he has ever met with a genuine example of a case of parturition rendered tedious and protracted by this cause alone. He considers therefore the dogma as in a great measure unfounded, and its general prevalence as the result of repeated but inconsiderate assertion.

Of Tediousness of Labour from Over-distention of the Uterus.—In these cases the womb may be supposed to be distended beyond the natural leverage of its contracting fibres, and therefore beyond its capacity for exerting its contractile and parturient powers most advantageously. When over-distended, whether by a plurality of children or by the presence of an extraordinary quantity of liquor amnii, or by any monstrosity or diseased condition of its contents, it accordingly seldom fails at the full period of gestation to become the subject of an unusually tedious labour. Should there arise under these circumstances a state of inordinate excitement of the heart and arteries, bleeding may often be resorted to with great advantage; whilst instrumental midwifery might be made available for the delivery of the first of twin children, both with good effect and very little inconvenience either to the patient or the practitioner. This point will be further illustrated hereafter; when moreover we shall particularly notice the modes of management proper to be adopted in cases of tedious labours from defective capacity of the pelvis. Under another head of subject an opportunity will likewise present of noticing some analogous difficulties arising from malpositions of the fœtal head within the pelvis.

Of Cases of Protracted Labours from the Presence of Tumours within the Pelvis, Enlargements, Indurations, Cicatrizations, etc., of any of the parts forming the Maternal Passage.—See Perfect's Cases, vol. ii. p. 34. Smellie's Cases, vol. ii. coll. 21, no. 2, c. 3, 4. Medic. Essays, Edin. vol. v. p. 351. Journ. Gén. de Médecine, etc. tom. lxxii. p. 242. A case of tedious labour from the os uteri being obstructed by an extraordinary membrane, which was ruptured by the finger. Journ. für Geburtshulfe von Siebold, b. ii. seit. 409. See a case of difficult parturition from the neck of the uterus being plugged up by a body of a glandular structure, History de l'Acad. Roy. des Sc. 1705, p. 52. A case of obliteration of the orifice of the uterus, in consequence of a labour of great severity, fol-

lowed by the retention of the menstrual discharge, which was eventually set at liberty by an artificial aperture made by an incision at the most depending part of the uterus. The patient recovered and menstruated ever afterwards through the artificial aperture. Corvisart's Journ. de Méd. etc. tom. vii. p. 30. Gautier moreover reports a case of labour rendered difficult by the non-correspondence of the orifice of the womb with any part of the vaginal passage, the effect, as was supposed, of anteversion of the uterus. The case was treated by section of the most accessible part of the uterus, and the delivery effected through THE ARTIFICIAL APERTURE by means of the forceps. "The patient suffered no other inconvenience than difficulty in voiding her urine during the first four-and-twenty hours after her delivery; which is common enough after labours in which the head is arrested a long time within the passage. She perfectly recovered in a short time. Her menses returned in six weeks after her confinement, and subsequently reappeared very regularly at their proper periods." Par Louis Gautier. Corvisart's Journ. vol. vii. p. 30, in continuation of the preceding article.

See two very important cases illustrative of this subject of tumours in the pelvis growing out of the sacro-ischiatic ligament, one of which terminated fatally, and the other was cured by extracting the tumour through an incision made into the cavity of the pelvis by P. P. Drew, M.D., of Fermoy, county of Cork. Edin. Med. and Surg. Journ. vol. i. pp. 20 and 23.

Consult also, as being analogous in its effects, the following case, by Giffard, of a tumour adhering by a membrane to the back part of the vagina, which obstructed parturition. The delivery was effected by turning. The child was born alive, but died soon afterwards. Giffard's Cases in Midwifery, case 62, p. 141.

Chapman reports a fatal case of difficult labour from malformation of the external parts. The fœtus was delivered by the anus. "The ossa pubis had no covering of fat, nor of any thing else that was natural, excepting the common integuments. Where the rima magna should have been, there was only a small aperture through the teguments. There was no appearance of labia, clitoris, or nymphæ. The aperture was only large enough to admit one finger. The mouth of the womb could not be felt; for towards the os sacrum there was no passage at all; whilst under the pubis a finger was easily admitted. At this part, which was very dry, there was not the least force, pain, nor swelling; whilst backwards towards the anus all these circumstances were present. The anus was dilated enough to receive the hand, and was very thick and swollen. In that part also there was a large tumour, which bore hard down, and even presented externally at every pain." The reporter of the case made an incision into the vagina through that part of the covering of the tumour which presented out of the body, and passing up a finger, felt the os uteri dilated and the child's head pressing to be born. He dilated the orifice which he had made, and through that extracted a child of about six or seven months' gestation, together with its

placenta. The patient died. Chapman's Midwifery, case 34, p. 206. See numerous references to cases of malformations and injuries of the parts forming the os externum, which occasioned difficult parturition, Journ. de Méd. Chirurg. et Pharm. tom. xlix. p. 358.

M. Toison, a surgeon of the French navy at Brest, reported the case of a lady of that town, who had her vagina so narrow that she could scarcely admit the barrel of a quill, but who nevertheless was impregnated and happily delivered of a fine strong child, after only three hours' pains. Hist. de l'Acad. des Sc. 1748, p. 48. A similar case is given in the same work, 1712, communicated by M. Antoine, surgeon at Méry sur Seine.

Giffard quotes a case of difficult labour from expansion and superabundance of tissue of the inner coat of the vagina. "This expansion of the inner coat of the vagina I believe proceeded from a former difficult labour, when the parts, as I was informed, were much torn, and afterwards, from negligent management, grew together; and subsequently became extended, probably from the forcible operations of the penis during the repeated acts of the coitus. This impediment presented itself about an inch and a half within the vagina; and was about three or four inches in breadth. The orifice of the uterus lay about an inch and a half above it, and not at all connected with it. The delivery was effected with great difficulty; but not without the sacrifice of the child's life. In three days the patient was able to empty the bladder without assistance, and from that time she gradually recovered. Giffard's Cases in Midwifery, case 100.

We are indebted to Dr. Smellie for the publication of an interesting case of resisted parturition by contraction of the external orifice, which was communicated to him by a practitioner of midwifery in London. The patient was forty years of age. The hymen shut up the passage into the vagina, and was ruptured by the head of the child; so that the patient had an easy delivery. Smellie's Midwifery, vol. iii. col. 31, case 26. The following is a similar case of defective capacity of the external orifice, but known to have been the consequence of injury sustained about fifteen months previously, during an extremely tedious and painful labour. The child was still-born. The labour being long protracted, it was determined to make an incision through the obstructing membrane; but before it was found convenient to adopt this procedure, the child was born, the obstacle to its passage having given way to the force of the pains. To prevent reunion of the ruptured parts, a pessary was introduced into the vagina. Com. by Dr. Labordette, Corvisart's Journ. tom. xxiii. p. 138. Consult also the following case of difficult labour from the presence of a strong membrane stretching across the vagina. Its situation in the vagina was about an inch and a half from the orifice. Its direction was obliquely from before and above, downwards and backwards. It was of rigid tissue, and thicker in front; but thinner and more depressed as it approximated the posterior walling of the passage. On the left side, and pos-

teriorly, there was a small aperture through it just sufficient to admit a catheter: it had also been sufficient to have transmitted the menstrua and semen masculinum. The woman had been in labour several days, and was much exhausted before the required operation of incision of the obstructing tissue was performed. The delivery was completed by the forceps. The child's life was saved, and the mother recovered well and soon. See a case which occurred to Weis, professor of anatomy and surgery at Altorff, of a labour rendered difficult and fatal by the presence of a rigid membranous tissue which, by connecting one labium of the uterus with the other, resisted all dilatation of its orifice. The patient died of inflammation of the uterus. This observation is especially reported by Tretzelius, in a dissertation entitled, Historia partûs impediti ex membrana tendinosa os uteri internum arctante. Sandifort. Thesaur. 1761. Limonier quotes on the same occasion, the celebrated case of Ruisch, which proved more fortunate. The patient had endured labour pains for a long time and fruitlessly. On Ruisch being consulted, the cause of the difficulty was discovered to consist in an obstructed state of the hymen, which was apparently entire, and unusually thick and strong. It was moreover propelled outwards considerably beyond the level of its natural situation. By means of a grooved sound and a pair of scissors, Ruisch made an incision through the obstructing tissue. But the delivery still not taking place, he carried his inquiry further, and met with another thick membrane, situated higher up in the vagina than the former, which had the effect of completely blocking up the vaginal passage, and of preventing the descent of the head of the child. This second membrane having been also incised, the patient was speedily delivered of a living child.

Some interesting cases of the same description are recorded by Morgagni. Anat. Médic. Epist. xxxv. art. 12, et Epist. xlvi. art. 17; and also in the Journ. de Méd. etc. par Leroux, tom. xxxvii. p. 215. See moreover, in the latter publication, a very good case of delivery by an operation, after the failure of the natural powers. It was accomplished in consequence of a division of the perineum. The subject of the case had sustained an injury of the external genitals by burning, when three years old. Arriving at the age of nineteen she wished to be married. Her accidental conformation, however, presented an impediment, which was deemed important. She therefore went to Paris; where she underwent an operation. The part was incised. But this incision healed; and the passage became as much closed as before. She married, however, at all events, and soon became pregnant. At the full period of gestation she returned to Paris; and was attended by MM. Reis and Champignon. On the accession of labour pains, the child presented at the vulva; but could not obtain egress by reason of the external orifice being preternaturally contracted; the aperture not exceeding the diameter of a piece of five francs. An incision was made into the stretched perineum of about two inches in length. After a few subsequent pains the child was delivered. When the perineum regained its proper size the wound was very small; and it perfectly healed in fifteen

days. Journ. de Méd. etc. par Leroux, tom. xli. p. 167. In the following case we have an example of difficult labour from morbid hardness and contraction of the neck and orifice of the uterus, ascribed to a venereal source, successfully treated by incision, or division of the part. The difficulty thus sustained was complicated with placental presentation and hæmorrhage. Delivery became imperative on account of the hæmorrhage: but it appeared impracticable on account of the callous hardness of the neck of the uterus. The practitioner in attendance, in the absence of further professional assistance, for the obtaining of which there was no time, determined upon an incision of the part. From the considerable hæmorrhage previously sustained, it was impossible to ascertain what might have been the loss of blood from the operation. The incision having been made, the practitioner's hand was admitted without much difficulty, and the delivery was effected. The child exhibited some faint signs of life and was baptized. The mother, after being in a doubtful state for about ten days, began gradually to improve; and she eventually recovered. Com. by M. Mangin, etc. Journ. de Méd. etc. tom. xli. p. 174.

As being analogous to several of the foregoing cases we may notice the following example of morbid thickening of the uterus during gestation; which was accompanied by hæmorrhages, and which eventually terminated fatally. The child's head was unusually large; but not from hydrocephalus. "In the autumn of 1800 I was requested to see the wife of Jean S. Daniel, aged forty-two years, who had borne ten children and experienced two miscarriages. She was now pregnant of her thirteenth child, and at her full time. This is the account she gave me of her case. During the fifth month of her pregnancy she experienced a considerable loss of blood, which lasted between four and five days, accompanied by acute pains and cramps in her superior and inferior extremities. During the seventh month she again experienced a similar loss of blood, accompanied by the same symptoms. Upon my arrival I found the patient suffering from a discharge of blood as considerable as the preceding, and attended with pains which announced a speedy delivery. I could not however satisfy myself that there was any dilatation of the orifice of the uterus. She complained of a pain, which she especially referred to the neck of the womb; and which she principally felt on the right when she lay on the right side, and on the left when she lay on her left side. Having asked how long it was since she had felt her child, she answered between four and five days. The pains, the hæmorrhage, and the other accompanying symptoms, continued for four days; the waters having been discharged from the first. From the resistance given to the labour by the neck of the uterus, I thought it my duty to take blood from the patient TWICE. I moreover advised emollient injections and bathing. I obtained no advantages from these means. The pains suddenly ceased, and the patient sank. I availed myself of an early opportunity to inspect the body; and I observed as follows: After having made my incisions through the integuments, and through the parietes both of the abdomen and the womb, I found a male child, of which the head was of monstrous

size, without however being hydrocephalic. It was twenty-two inches in circumference. It was so much macerated that the epidermis peeled on the slightest touch. The parietes of the uterus were three inches thick, both those of its fundus and of its sides, as was especially the part contiguous to the bladder. But very near the orifice it was not so thick; for there it appeared to be nearly in its natural state." Com. by M. Neyronis, Journ. de Méd. etc., par Corvisart, tom. v. p. 304.

The greater number of impediments to the function of parturition, occasioned by rigidities, cicatrizations, adhesions, and other diseased states of the soft parts, are well illustrated by Dr. Denman in his Introduction to the Practice of Midwifery, under two or three articles. See Denman's Introduction, chap. x. sections 5, 7.

Of Protracted Labours imputed to Malpositions of the Uterus. —Some of the principal malpositions of the uterus have already been sufficiently considered under the diseases of pregnancy, and some others will be treated of hereafter, when we come to speak of certain varieties of complex labours. The only malposition of the gravid uterus which we have now to consider is its obliquity of position in the abdomen. This obliquity has been correctly defined to be a deviation of its longitudinal axis from the axis of the superior aperture of the pelvis in the latter months of pregnancy. The deviations from this its best and natural position differ in extent, from the slightest variation to that extreme degree, in which it is found when placed transversely with respect to the axis of the trunk of the body, its fundus being depressed as low or even lower than its cervix. Mauriceau mentions the case of a dwarf of the height of only two feet whose abdomen reached down to her knees.

When the obliquity of the uterus is slight, it is said to be incomplete: when on the other hand it is so great that a part of the os uteri rests upon some bone of the superior aperture, it is said to be complete. Obliquities of the uterus have been distributed into three principal varieties, viz. the anterior, which is not unfrequently met with, in a moderate degree, in women who have had many children; the posterior, which is very rare, and cannot even exist excepting in combination with a curvature of the spine in the same direction; and the two lateral obliquities, of which the right is incomparably the most frequent. Many causes of obliquity of the uterus have been enumerated by authors; as, e. g. preternatural adhesions of its neck and orifice to the sides or other parts of the tissues immediately investing the pelvis; distortions of the pelvis and of the spine; abdominal or pelvic tumours encroaching upon its natural locality; an unequal relaxation of its own ligaments; place of attachment of the placenta; and a supposed early determination given to it in the first months of pregnancy by its contiguous viscus, the rectum.

With respect to the influence of such forms and degrees of obliquities of the uterus as are commonly met with in the production of difficult labours, the sentiments of English practitioners are widely discordant with those of

foreigners, and those of living practitioners of all countries, with the opinions of their predecessors of the last century. Dr. William Hunter, Anat. Descript. of the Grav. Uterus, p. 11, has published the following statement, as containing his distinct opinion on the subject, founded on his own personal experience. "As far as I have been able to observe, the mere obliquity of the uterus never occasions so difficult a labour as to require any artful management to bring the os uteri into a proper situation. In such cases, as in many others, art can do little good, AND PATIENCE WILL NEVER FAIL." On the same question Dr. Denman has maintained a very similar opinion. That writer has expressed himself as follows. "The position of the os uteri is seldom found exactly in correspondence with the centre of the superior aperture; it being in some cases projected on either side, and on others so far backwards that it cannot even be felt for many hours after the labour has begun. This oblique position of the os uteri, to what direction soever it may tend, has been considered not only as frequent, but as the most general cause of difficult labours; and this doctrine, which was first promulgated by Deventer, was at one period of time taught and received in all the schools of midwifery in Europe." After some further remarks, chiefly on the exaggerated magnitude and frequency of this cause of difficult parturition, Dr. Denman concludes with a judicious acknowledgment that it might sometimes operate as a cause of procrastination, and that it is often combined with other causes of difficult labours, although singly it may not be of sufficient importance to be the cause of dangerously difficult ones: but that it may retard a labour, or accompany a difficult one; it does not require any manual assistance, nor that we should retract it to a central position with respect to the cavity of the pelvis." Denman's Introduction, chap. x. sect. 3, art. 4.

Baudelocque gives an opinion not essentially discordant with the sentiments of the above eminent authorities:—"The obliquity of the uterus," that writer observes, "is in general of much less consequence than is commonly supposed. It would be discreditable to our art now to consider it, as Deventer did, as the most frequent cause of difficult and preternatural labours." The same author reports, however, a case of malposition of the orifice of the womb, the result of the obliquity under consideration, with the character and consequences of which the reader should be made acquainted. "A woman of the village of Grimberg, near Brussels, in labour of her first child, placed herself under the care of a midwife. This person kept the patient standing, and urged her to bear down during her pains, for three days and two nights; so that the child's head appeared at the vulva enveloped in the anterior part of the uterus, when M. Bavăi was sent for. This portion of the uterus, as stated by that gentleman, COVERED THE HEAD LIKE A CAP AND WAS INFLAMED. Its orifice, which he was not able to distinguish without great difficulty, was dilated only to the extent of a sixpenny piece. The waters had been drained away for some days." After much mismanagement of the case, according to the representation of M. Baudelocque, the patient died. On opening the body after death, the placenta

was found attached to the womb in front. The pelvis was well formed and of ample magnitude. The orifice of the uterus was in apposition to the nape of the child's neck; the head having been expelled enveloped by a portion of that viscus, which was gangrened and in a state of separation from the rest. "This case, in which I have in some measure preserved the expression of the author," proceeds M. Baudelocque, "presents, in a clear and alarming manner, the melancholy effects of an obliquity of the uterus, in a case left totally unassisted, or rather committed to the management of the blindest ignorance and temerity." After describing another case of similar malposition of the uterus, relatively to the superior aperture of the pelvis, he concludes his discussion of the subject by recommending the practice adopted by himself in the management of the second case. After placing the patient in the best position for the objects to be attained, that of lying on the back, "I raised the abdomen with one hand, to diminish the obliquity of the uterus; while with two fingers of the other, after having pushed back the child's head very little, I was able to hook the anterior edge of the orifice of the uterus, to bring it towards the centre of the pelvis, where I kept it during a few pains; and then permitting the woman to bear down with the little strength she had left, she was delivered in the space of a quarter of an hour." Baudelocque's Midwifery. Heath's Translation, vol. i. p. 196. Among many hundreds of procrastinated and difficult labours of various sorts which the author himself has attended, superintended, or been consulted in, he does not remember to have met with a single case of any considerable difficulty which he could fairly impute to obliquity of the uterus ALONE; without being complicated, or accompanied, or even produced, by some concurrent or pre-existing occasional cause. Of M. Bavăi's case he cannot help thinking, that from its commencement it was one rather of presentation of the nape of the neck than of obliquity of the uterus.

OF DIFFICULT LABOUR FROM DEFECTIVE CAPACITY OF THE PELVIS.—The deficiency of capacity here supposed, must be presumed to be only very moderate, or even doubtful, as our classification of labours requires that the more considerable distortions should be referred to our fourth and last class, viz. that of instrumental labours.

Cases of this description devolve upon the practitioner a very high degree of responsibility; inasmuch as they require, on his part, the exercise of a competent capacity to distinguish cases admitting of delay, accompanied however in the mean time by good management of the natural powers, from such as might speedily require the assistance of art.

The following might be recommended as useful general rules to enable the medical attendant to come to safe conclusions on these important points.

1. If an experienced practitioner cannot EASILY reach the promontory of the sacrum at an early period of the labour, he may generally conclude upon such an amplitude of the pelvis as should supersede the necessity of instrumental assistance.

2. No labour can be considered as dangerous from a pelvis of deficient size until after the liquor amnii shall have been discharged.

3. The natural powers may be generally more relied upon in moderately young subjects, than in persons more advanced in life, in otherwise equal circumstances.

4. Judicious management of the natural powers by timely, and in some cases by repeated, bleedings, may often be made available for superseding the necessity of using instruments.

5. First labours require more time, when in any degree obstructed by a pelvis of doubtful size, than subsequent labours.

6. Much protrusion of the integuments of the fœtal head into the vagina, before any or a considerable part of the skull shall have engaged in the brim of the pelvis, may be assumed as indicative of too small a pelvis to admit of the labour being completed with certainty, and with safety to the child, without the use of instruments.

7. Progressiveness in the descent of the head into and through the pelvis, should be considered as a moderately good indication of its being sufficiently ample in its dimensions to admit of an eventually safe and living birth. This rule however should not be too absolutely depended upon. The author can call to his recollection one unhappy case, in which the labour occupied no more than EIGHTEEN HOURS; but which, although progressive throughout, proved fatal both to mother and child. The pelvis was scarcely of standard size; the patient having been previously delivered of a dead child by means of the forceps. The labour commenced with a sudden discharge of the waters. On this, the practitioner engaged to attend the lady in her confinement was immediately summoned to her assistance; and the call was promptly obeyed. On his arrival, the orifice of the uterus was already in a state of incipient dilatation. Such was the extraordinary activity of the labour, that a respite of three minutes from strong bearing pains was scarcely allowed, during the whole duration of the struggle. To subdue the unusual violence of the accompanying excitement of the heart and arteries, an ample bleeding was practised ONCE. About two hours before the termination of the labour, which at that time was become exceedingly tempestuous, the patient was seized with a severe rigor, which lasted about five-and-twenty minutes. Another bleeding was then proposed; but rejected in consultation. The child was still-born. The fœtal head was greatly compressed; and the umbilical cord was of a greenish hue. The mother, subsequently to her delivery, complained of an intensely severe pain in her left iliac region; for which another bleeding was proposed on the evening of the same day; but was as before resisted, through the influence of an inexperienced medical practitioner, who subsequently proved to have been an intimately affianced relative to the poor sufferer. The victim of these untoward circumstances died on the ninth day after her delivery. The fever which accompanied the organic dis-

ease which eventually destroyed her, presented a strongly remittent, or rather an intermittent, type. On inspecting the hypogastrium after death, an abscess containing about two ounces of strongly concocted pus was found to occupy the left iliac region. Whether the ovary had sustained any mechanical injury during the labour, or whether it became the nucleus of the inflammation and suppuration which then commenced, from mere determination of the general excitement to that locality, cannot now be ascertained. So much disorganization of the part had taken place that no distinct remains of the left ovary and fallopian tube could be positively identified.

8. Impaction of the fœtal head within the pelvis is a dangerous condition of a labour; and one which should not be allowed to exist for any positive duration of time. Impaction is to be considered such a close wedging of the head within the pelvis, the caput cuneatum of Celsus, as not to admit of its being moved either upwards or downwards, by any safe effort of the practitioner. This is an extreme form of difficulty, which can scarcely ever be expected to be got over by any exertion of the natural powers. During the whole period of an impaction of the head within the pelvis, violence from pressure is sustained, continuously and without relief, by the same tracts of tissues. This subject will be further noticed when we come to treat of the use of instruments.

9. Simple arrest of the head within the pelvis may form a case of some difficulty; but one, nevertheless, of very inferior importance to that of impaction. In cases of arrest, all that we usually discover in the first instance is, that the head makes little or no progress after it shall have arrived at a given stage of descent within the pelvic cavity. If in any degree smaller, or differently modified as to form, it might admit of being propelled very safely and happily through the inferior aperture. We accordingly know that nature in many cases possesses the means, although limited as to their extent, of effecting such a reduction of its bulk, or modification of its form, as may eventually suffice to bring it within the range of her power to expel it. Inasmuch therefore as in cases of mere arrest, the pressure sustained by the parts lining the pelvis is only felt during a few seconds at a time, the practitioner may often avail himself of any probable chances or changes, and considerable changes might reasonably be often expected to occur after the lapse of a few, or at all events of several more hours, and trust to a happy issue. The fœtal head being to be compressed only by the strong contractions of the uterus made to bear upon it from behind, it is obvious that time must be afforded for an adequate number of such contractions to be made, and to produce their proper effect. It is the especial duty of the practitioner to superintend and watch the safety of that process; to sustain the efforts of nature by well-timed remedial measures, and to be prepared to give further assistance only in the event of ultimate failure of the natural powers. There will however be no danger of failure of those powers whilst the heart and arteries remain unexcited; whilst the heat of the body continues nearly natural; and whilst

a breathing moisture suffuses the skin. The tract of tissue exposed to the pressure of the head during every pain will be in no danger of sustaining any irreparable injury, provided each pain be immediately followed by a distinct recession of the head. Again, no serious injury is likely to succeed to a protracted struggle of the parturient function, provided the practitioner might find himself competent to carry his finger between the fœtal head and the parietes of the pelvis during the entire progress of the labour, without causing much additional pain to the mother.

10. Tenderness and swelling of the parts, and especially of that portion of the vagina against which the head comes to impinge during each contraction of the uterus, should be considered as an indication for the practitioner's interference; either by further constitutional treatment, as bleeding, the exhibition of opiates, purgatives, saline diaphoretics; or else by any required interposition of operative midwifery.

11. The integumental protuberance of the presenting part, which at an earlier period of the labour had been firm and tense, becoming subsequently soft and flabby, may usually be considered as furnishing a pretty strong evidence of the child having been already deprived of life. It is rendered more conclusive, if accompanied by a considerable fœtor of the discharges.

The following is a brief list of living births which followed painful and protracted labours, or which occurred under circumstances little calculated to sanction the anticipation of so favourable an issue. Perfect's Cases in Midwifery, vol. i. c. 44, p. 256; vol. ii. c. 90, p. 143, and c. 91, p. 146; vol. ii. c. 143, p. 439. Smellie's Cases in Midwifery, vol. ii. coll. 21, c. 1, 2, 3, 4; coll. 22, no. 2, c. 1 and 2. The second and third volumes of Smellie's Midwifery abound with excellent cases, which might be here very advantageously referred to in illustration of the facts and principles just submitted to the reader's consideration. See Giffard's Cases in Midwifery, case 150, p. 357. Mauriceau, tom. ii. obs. 14, p. 12, obs. 33, p. 29: tom. ii. Append. obs. 81, p. 43.

The author has great satisfaction in referring the reader whilst on this part of his subject to the excellent volumes of cases published within the last few years by his friend and colleague Dr. Ramsbotham. There is scarely any department of practical midwifery which they do not admirably well illustrate. Dr. Ramsbotham's contributions towards the improvement of this branch of the profession are indeed truly important, and should find a place in the obstetric section of every general practitioner's library in the kingdom.

Of Protracted Labours from Rigidity of the Membranes of the Ovum.—On ordinary occasions it is unquestionably the best practice, to allow the membranes to be ruptured spontaneously; and practical writers abound with cases rendered difficult and protracted from a too early escape of the waters: see at least half-a-dozen such cases quoted by Smellie in his second volume of Cases in Midwifery. Burton's Midwifery, obs. 32, p. 376. Mauri-

ceau, tom. ii. obs. 42, p. 38. obs. 50, p. 44. obs. 60, p. 51. obs. 74, p. 62. See a very curious case of this kind, in p. 92, obs. 112. See also obs. 148, p. 117. obs. 312, p. 258. In this last case there was a real knot on the umbilical cord. An interesting case of tedious labour from the too early discharge of the water is reported by Dr. James Hamilton, Select Cases in Midwifery, 1795, p. 25.

In the event of the membranes being unusually dense and rigid, there can be no objection to their being ruptured in the manner recommended by Dr. Denman, that is, by the nail of the index finger, notched into a small saw, or in any other way which might be deemed more convenient by the practitioner.

Protracted Labours from the Umbilical Cord being coiled round the Neck of the Child.—It has pleased some writers to dispute the efficiency of this cause of protracted labour. The author is quite satisfied that he has repeatedly met with cases where the entanglement of the cord here supposed had the effect of protracting the completion of the labour, as well as of causing more directly the death of the child by strangulation. An experienced practitioner may often recognise in this form of protracted labour the actual cause of delay, by observing that the fœtal head is carried up to a very unusual distance into the vagina from the ultimate limit of its previous descent. For this perplexing accident it seems impossible to point out either a preventive or a remedy, which could be recommended equally for its safety and efficiency. The character of the latter part of the labour is such as to make it quite sure that the child might be born alive in the absence of the impediment opposed to its timely exclusion by the mechanical interference of the umbilical cord. This being the case, it would seem probable, that the duration of such a labour might be shortened by means of the forceps: but, on the other hand, it would seem nearly equally probable, that the chance of strangulation of the child by the action of the umbilical, cord might be greatly enhanced by forcible traction of the head with that instrument. Add to this, the danger of thus producing a premature separation of the placenta. The forceps, therefore, in such a case, should be made available, in the author's opinion, as as a last expedient of our art, in the event of an ultimate failure of the natural powers.

As being analogous to cases of parturition delayed by the action of the umbilical cord, in consequence of its having been in fact shortened, by being coiled round the child's neck, the following example of a case of protracted labour, which proved fatal to the child, from the action of an extraordinary ligament which was found coiled round its left leg. "The pelvis was ascertained to have been sufficiently capacious, and the soft parts to be well disposed to dilate. The pains being regular and effective, a confident hope was expressed that the labour would be happily accomplished. Shortly afterwards the head made its entry into the pelvis and the membranes were ruptured. But now, instead of the expected increase of the force and frequency of the pains, there occurred a gradual diminution of both; so that, although not totally sus-

pended, they proved fruitless and ineffectual. In the morning of the second day the case was nearly in the same state. A purgative enema was exhibited, which produced no other effect than that of unloading the larger intestines. On the third day an opiate was administered. The patient remained, however, in the same state till evening, when the pains were renewed with some vigour, but without any proper effect. On the fourth day, she was delivered with the forceps. The placenta was soon after expelled. A preternatural ligament, different from the funis, was found tightly coiled round the left inferior extremity of the child, which had caused a deep sulcus all round it. The left foot below the ligature was enormously swollen. There can be but little doubt that the attachment of this ligament to some part of the uterus must have prevented the expulsion of the child. The patient recovered rapidly after her delivery; but on the twenty-sixth day subsequently, she complained suddenly of faintness, which increased rapidly, and in less than a quarter of an hour the patient ceased to breathe. It is much to be regretted that a post-mortem examination was not permitted." Com. by Mr. William Newnham of Farnham. Med. Repository, vol. iii. p. 477.

Of Cases of Protracted Labour from a supposed Hitching of the Fœtal Shoulders on the Pubes.—Hitching of the shoulders against any particular part of the pelvis in the cases here alluded to is much less frequently the cause of the delay than simple arrest from their unusual magnitude. "The head of this child was not large; but the breadth of its body at the shoulders, whence proceeded the principal difficulty, was nearly eight inches and a quarter, and at the breech it measured between seven and eight inches." Perfect's Cases in Midwifery, vol. i. c. 49, p. 287. "The child's head had been for a long time delivered; but the midwife, not having been able to extract the shoulders, sent for me; but before I arrived, the patient had been delivered of a dead child." Smellie's Midwifery, vol. ii. col. 21, no. 3, case 4; and col. 21, no. 3, cases 5 and 6. The author has never met with an example of protracted labour which he could fairly impute to arrest of the shoulders at the brim of the pelvis by reason of their malposition relatively to its parietes after the head had actually made its entry into the cavity.

Anchylosis and Rigidity of Movement of the Coccyx is a cause of protracted labour of rare occurrence. The author has never met with a single instance of a case of this kind, either in his own practice or in that of the Maternity. There is no doubt, however, that this cause of difficulty has sometimes occurred. "I have of late," observes an excellent writer, "in a particular manner, examined the os coccygis, especially in laborious cases, and in women who were turned of thirty before the birth of the first child, and have found it actually ossified in two patients, the first turned of forty and the other about the age of thirty-three: but in neither of these cases could I perceive that this rigidity retarded the labour: for in both, when

the head of the child came down to the os externum, it passed along, and the women were easily delivered." Smellie's Midwifery, vol. ii. no. 2, case 1. This facility of birth, in cases of anchylosis of the coccygis, must obviously depend upon more than ordinary dimensions of the inferior aperture, and especially upon an unusual length of the antero-posterior diameter of the outlet of the pelvis.

OF THE CIRCUMSTANCES MOST DESERVING OF THE PRACTITIONER'S ATTENTION DURING HIS ATTENDANCE ON CASES OF PROTRACTED LABOURS.—These may be advantageously distributed into a short but enumerated series of practical directions and remarks.

1. We have especially to watch the accession and progress of inordinate excitement of the heart and arteries. In many cases, the term labour is not a misnomer, when applied to the exertions made by the patient to effect the birth of a well-grown child at the full period of gestation. When any considerable obstacles are opposed to the accomplishment of the process, the labour must be expected to require greater exertions, and to be proportionally more severe. Hence the gradual acceleration of the pulse at advanced periods of the greater number of labours, and the intense excitement of the sanguiferous system in cases of more than ordinary severity and duration. Such a state of excitement of the heart and arteries is moreover not unfrequently accompanied by extreme restlessness; which indeed should be considered as a never-failing exponent or expression of extreme anguish of suffering. Bleeding freely, and sometimes repeatedly, constitutes the principal and sovereign power to which the practitioner can resort for the control of these formidable symptoms. The use of this same power, whilst it never fails to reduce the high tone of the accompanying fever, and of mitigating the sufferings of the patient, may also be generally relied on as a means of improving the efficiency of the labour pains; while it may be confidently expected to promote a speedy relaxation of the rigid and resisting tissues. Dr. Rush, of Philadelphia, as the reader has been already apprized, recommended bleeding before labour as a prospective measure calculated to ensure an easy consummation of the process; and the same practice the author understands is still very generally adopted by his countrymen. In a common case of slow progress, and of resistance from rigidity, it will always be a safe measure to abstract between eighteen and five-and-twenty ounces of blood; and in cases of great excitement of the heart and arteries, somewhere between five-and-twenty and five-and-thirty or forty ounces. Any accompanying irritation may be subdued by opiates and saline diaphoretics.

2. It is a duty of immense importance during our attendance in cases of this kind to watch the safety of the head. Confusion of intellect, severe pain of the head, sudden loss of vision, delirium, and stupor, should be considered as harbingers of convulsions and apoplexy.

3. Great severity and long duration of the action of labour SUBSEQUENTLY to the discharge of the liquor amnii, should especially be made objects of vigi-

lant attention and active treatment. The remedies, prophylactic and curative, for all these states of high phlogosis, are, bleeding, opiates, and saline diaphoretics.

4. Inordinate uterine action, complicated with any violent pains different from and accessional to the proper pains of labour, should be considered as indicative of some danger of rupture of the uterus. After free bleeding, the local difficulties of the case should be strictly examined, with a view to ulterior treatment. How far any further delay might be safe or preferable to a more speedily conclusive treatment, would of course present itself for a most dispassionate, and at the same time a most earnest deliberation. A life, or even two lives, might be to be preserved or sacrificed as the decision to be arrived at might be more or less discreet, and founded on the results of a large and well-directed experience.

5. The state of the soft parts in respect to temperature, swelling, tenderness upon pressure, deficiency of mucus, fœtor of the discharges, should be made objects of constant vigilance and attention during the progress of difficult and protracted labours. In the management of such cases, more than ordinary care will sometimes be required to secure the tissues most exposed to pressure from the effects of contusion; because contusion is too apt to be followed by inflammation of a low tone, and that by purulent discharges and sloughings.

6. Another important duty of an obstetric practitioner during his attendance on a case of protracted labour, is to attend to and from time to time to ascertain the state of the bladder. The author was once consulted in a case of protracted labour, of which the progress had been suspended at an early period by the mechanical interference of an over-distended bladder. The bladder was probably partially over-distended at the commencement of the labour, or at least sufficiently distended to occupy the greater part of the brim of the pelvis. When the author was first consulted, he found beyond the bladder, which was much distended and which might most easily be mistaken for the membranes of the ovum, the orifice of the uterus very considerably dilated. The introduction of the catheter was attended with no difficulty; and what had occasioned the previous suppression it was not easy to determine, unless it might have been an unusual contraction of the urethra from its more than ordinary elongation. After emptying the bladder, which contained some pints of urine, the fœtal head speedily descended into the pelvis, and the patient was delivered without further difficulty in the course of about an hour and a half.

At an advanced stage of a labour rendered tedious by the fœtal head occupying pretty closely the pelvic cavity, it is often found difficult to effect the introduction of the catheter. This difficulty may however more or less certainly be got over by opposing a firm bearing against the presenting head; so as to raise it above the tract of tissue in front, against which it is presumed to be most closely impinging. With this precaution, added to great slowness of proceeding, and adequate dexterity, the course of the urethra may be suffi-

ciently relieved from pressure to enable the medical attendant to introduce into the bladder a small or otherwise well-adapted catheter.

In a case of suppression of urine which followed an accidental displacement of the uterus during gestation, relief could not be given by the catheter, and it was determined in consultation to puncture the bladder an inch above the pubis. Six pints of urine was thus withdrawn, and in half an hour afterwards the patient made water in the usual way, to the amount it was supposed of four pounds more. The patient was delivered in this case without difficulty; but she died soon after, from the wound inflicted on the bladder. Journ. de Méd. etc. tom. xvii. p. 180. This result conveyed a useful but melancholy lesson.

Mr. Christian, of Liverpool, has favoured the profession with some important observations on a species of vaginal hernia which during labour must be considered as having an intimate connexion with our present subject. "The distention of the urinary bladder, which in lingering labour has always been regarded by the practitioner with particular anxiety, is well known, and is well characterized by an elastic intumescence rising above the pubes and extending towards the umbilicus. It is also known that this distention on some occasions tends to protract labour; and that in this state the bladder is exposed to the risk of being materially injured in its tone or its structure. But the bladder may be distended, and labour may in consequence be protracted, where there is NO intumescence above the pubes to indicate such distention. It is therefore of great importance to determine when it may be necessary or not to introduce the catheter. According to the generally received opinion there is no necessity to introduce it where there is no perceptible tumour above the pubes; although the patient may not have passed any urine for many hours together." An accumulation of water in the bladder may therefore take place without any tumefaction above the pubes; and if becoming distended when thus occupying an unnatural situation, the distention may either escape the observation of the practitioner, or it may be mistaken by him for a disease of a different nature, requiring a different treatment. Under the circumstances now adverted to, a tense elastic tumour may be formed either under the arch of the pubes, as described by Dr. James Hamilton, Cases in Midwifery, p. 9, or on one side of the cavity of the pelvis, as published by Mr. Christian in the ninth volume, p. 281, of the Edinburgh Medical and Surgical Journal. "This derangement in the situation of the bladder is discovered by a peculiar fulness on one side of the pelvis, which is more remarkably evident during the presence of pain. At this time also the fulness or tumour becomes tense and evidently elastic; and although its boundaries are in general circumscribed, yet its base is somewhat diffused, extending along the side of the pelvis as far back as the sacrum. It varies of course in size, according to the quantity of fluid accumulated, and in the case I have related its diameter was equal to one-third of the transverse diameter of the pelvis. When the urine is drawn off, the whole of the tumour entirely subsides, and the catheter can be distinctly

traced along its whole extent, passing by the side of the vagina, where it may be felt running from before backwards in a horizontal direction; and where it will generally be found with its concave side downwards. As the tumour is covered by the vagina, and its base diffused, there can be no danger of its being mistaken for the membranes enclosing the liquor amnii, nor does it indeed prevent the os uteri from being readily felt. If an error of this kind is at all to be apprehended, it is where the tumour is situated under the arch of the pubes." This subject is further illustrated by an extremely interesting example of the lateral malposition of the bladder. The following are some of its principal features. The patient was forty years of age, and had been the subject of tedious labours on former occasions, and had once been delivered by the forceps. Mr. Christian was called to her assistance on the third day of her labour, and many hours after the full development of the orifice of the uterus. On making the usual examination, his attention was immediately attracted by a fulness which he encountered on one side of the pelvis; and which, from its increasing prominence during the presence of the pains, and from its tense elastic feel, he had no doubt was occasioned by a fluid. Upon feeling for the bladder, externally above the pubes, nothing but a solid body could be discovered. The catheter was then introduced, and a pint and a half of urine was drawn off. The instrument was distinctly felt along the side of the vagina, extending to the os sacrum. The immediate consequence of this relief of the distended bladder was the descent of the fœtal head into the cavity of the pelvis. Upon this Mr. Christian withdrew, leaving the patient under the care of her midwife. The child was born shortly after his departure. On the next morning, however, he was not a little surprised by another message from the same quarter. The midwife reported that there was a second fœtus; that the head was the presenting part, and that it was arrested at the brim of the pelvis, much in the same position as had been that of the child already born. On examination, Mr. Christian recognised a similar distention of the bladder as before; "and the urine was drawn off with the same immediate effect; as the patient had no more than three pains afterwards before the child was born. No further difficulty occurred in passing the water during her recovery; nor has she at any time since experienced the least inconvenience, either in retaining or voiding that secretion."

This lateral malposition and over-distention of the bladder is either much less frequently an obstacle to parturition than the anterior variety; or from its more retired locality, it has probably sometimes existed without having been detected, or even suspected, by the practitioner. Of the anterior protrusion the author has himself met with several cases; but not one of the other variety.

The anterior protrusion has been fatally mistaken for the membranes of the ovum, and made the subject of puncture and laceration. To a superficial observer the bag formed by the protrusion of the urinary bladder might appear to resemble very nearly that of the ovum: it can nevertheless be readily discri-

minated by an attentive practitioner previously aware of its possibility. "It is strongly connected with the fore part of the pelvis; so that the finger cannot be passed round its circumference, as in cases where the true membranes are forced down: and during the interval of a pain the os tincæ can be felt situated very high, and quite undilated." See Hamilton's Cases in Midwifery, p. 16. As the lateral tumour is covered by the vagina and its base diffused, Mr. Christian observes that "there can be no danger of its being mistaken for the membranes of the ovum; nor does it, indeed, prevent the os uteri from being readily felt."

Is it not probable that these malpositions of the bladder are often the results of previous adhesions of parts of its parietes to the neighbouring surfaces, in consequence of former bad labours, or of other causes of adhesive inflammation of the surfaces in question? Mr. Christian states, that the subject of his principal case had once been delivered by the forceps; and that the labour immediately succeeding had also been extremely tedious. He moreover adds, that one of the other patients, in which he had observed the same affection, had in a former labour a preternatural presentation. Other two patients had very tedious deliveries upon every occasion, though the pelvis in all was of the ordinary dimensions.

It being very possible to mistake tumours of this class for other elastic and extra-vaginal tumours within the pelvis, it becomes an important and indeed the first duty of the practitioner, in all such cases to introduce a catheter into the bladder; which, at all events, will furnish a test, if not a present remedy, for the evil with which he has to contend. No other instruments can ever be required for obviating impediments to parturition exclusively of this class.

Of Malpositions of the Fœtal Head as Causes of Protracted Labour.—It sometimes happens that difficulties occur in child-birth for want of sufficient space within the pelvis, and yet without defective capacity of that cavity, or excessive size of the child's head, but simply in consequence of the presentation of the head in an unfavourable position relatively to the superior aperture. Delays and difficulties are sometimes occasioned by trifling deviations from the best positions of the fœtal head, when about to present at the brim of the pelvis: such, for example, as when the vertex might not be quite central to the axis of the passage; but inclining more or less to one side of it; so as to cause the presentation of an occipito-parietal part of the head. The common effect of this malposition is, a hitching of an occipito-lateral part of the head against some anterior portion of the pelvis, as also indeed sometimes, though less frequently, against the promontory of the sacrum. The hand will occasionally suffice to rectify this very inconsiderable obliquity of position, and of course to put the labour into a train of more rapid progress: but this failing, the practitioner will experience little or no difficulty in effecting that object by means of one of the varieties of artificial powers with which he will find himself suitably provided in our fourth class of labours.

Of all the difficulties of parturition from malposition of the fœtal head rela-

tively to the maternal pelvis, those from face presentations may be placed amongst the most formidable; and they are also unfortunately such as are least capable of being substantially relieved or obviated by the mechanical resources of our art. When the face is discovered to present at the brim of the pelvis at an early period of a labour, whether before or very soon after the escape of the liquor amnii, there can, in the author's opinion, be no doubt as to the preferableness of turning, to all other modes of treatment. That operation, dexterously performed, would, at all events, give the child a good chance of preservation of its life; whilst it would also be the means of rescuing the mother on the very brink of a great impending danger. It is, however, well known that turning, never a perfectly safe measure to the child, is itself an operation of considerable danger both to mother and child, when performed at a late period of a labour, and many hours after the discharge of the waters of the ovum. When therefore called upon to act, or to give an opinion in cases of this kind, the first thing we should have to consider and determine upon, would be the expediency, under existing circumstances, of having recourse to the operation of turning. If we suppose, in any given case, the presenting part to have got low down into the cavity of the pelvis; that several hours may have elapsed since the discharge of the liquor amnii; and the action of the uterus to be already inordinately urgent and powerful, it would be next to impossible to save the child by any attempts to turn; and as it also might greatly compromise the interests of the mother, it would be the obvious duty of the practitioner at once to decline that measure. He then of course would have to deliberate on the choice of other expedients; and amongst other practical points he would very naturally consider, 1st. Whether, notwithstanding the existence of a certain amount of impediment from the malposition of his case, nature might not be expected, with the assistance of a judicious management of the constitutional powers, to triumph ultimately over her difficulty; 2ndly. In what special case, or cases, there might be no good and sufficient reason for indulging in any such expectation; and then, 3rdly. What, in such cases, should be the expedients of art for their relief.

First, As to the competency of the unassisted natural powers to effect eventually the expulsion of the ovum, with great chance of safety both to mother and child, under the unfavourable predicament of a face presentation; there can, indeed, be no doubt upon the subject. The author feels himself at liberty to state strongly his conviction, that there are very many cases of this class, amounting he is happy to believe to a considerable proportion of the whole number of face presentations; where it would not only be perfectly justifiable, but prove by far the better practice, to calculate and to depend upon the ultimate sufficiency of the natural powers: and he thinks he may very safely specify, as proper objects of the cautious treatment here recommended, the subjects generally of three out of the four several positions into which authors have usually distributed face presentations; viz. those with the chin directed either to the front or to one of the sides of the pelvis.

The author would indeed be sorry to make any statement which might chance

to mislead his younger brethren on a point of so much practical importance as the present; but he does feel it his duty to add, that, as far as the experience of any individual can be supposed to have weight in the decision of a subject on which no ONE man can possess very ample materials for the purposes of inductive reasoning, he is warranted in the belief, that, in a positive majority of cases under the circumstances of the presentation here supposed, nature might be relied upon for being eventually competent to accomplish her own work, compatibly with the safety both of the lives and structures interested in the struggle, and, at all events, compatibly with the preservation of the more important life of the mother. But let us suppose it to be then asked, in what special case or cases there might be no good and sufficient reason for entertaining any expectation of an ultimately favourable issue, without the interposition of art. To this query the author would answer, first, that a certain inferior proportion of all face-presentation births, under whatever circumstances as to position, might be expected to require the interposition of art for their relief. The reader will here very naturally advert to, and make a proper allowance for, the occasional influence of coincident causes of difficulty, such as confined or malformed pelves, rigidity of parts, infirm health, feeble uterine action, etc. etc. It is replied secondly, that all, or nearly all, face-presentation cases, with the forehead to the front of the pelvis, and the chin forced down into the hollow of the sacrum, might be expected to require turning at an early period, or the use of the forceps, for their consummation, even to ensure the safety of one life only. Before the forehead, if situated as now supposed, could make any considerable progress into the pelvis in front, the child's neck would be exposed to much violent straining and compression, and a considerable portion of its trunk would necessarily require to be admitted, together with, and closely folded, surface to surface, against the occiput, into the posterior part of the cavity. But the mechanical possibility of such a result could only arise from the casual absence of the usual and natural proportions relatively subsisting between the bulk of a child at the full period of gestation, and the capacity of the maternal pelvis.

Let us then next proceed to consider the proper measures, including the use of the hand, with other mechanical expedients, which it would be our duty to have recourse to in the several varieties and degrees of difficulty which present themselves in connexion with face-presentation labours. The author has already stated his opinion as to the eligibility of turning, as preferable to all other modes of treatment, WHENEVER THAT OPERATION CAN BE HAD RECOURSE TO AT AN EARLY PERIOD OF THESE LABOURS. But it unfortunately very often happens that we have no opportunity of ascertaining the facts of labours of this kind, either as to their presentations or positions, until after the lapse of many hours subsequently to the escape of the liquor amnii.

In all face-presentation cases, the head usually engages in the pelvis very slowly; but in the three positions first enumerated above, viz. when the chin is directed either to the front, or to one of the sides of the pelvis, its descent

ultimately into the cavity may, in general, be pretty confidently anticipated, without any artificial assistance. The author must therefore consider that the prosperous issue of the majority of such cases would mainly depend upon the judiciousness of their treatment constitutionally; which would have most especially for its object the subduction of the inordinate action of the agents of labour, and that of its natural consequence, an excessive excitement of the heart and arteries. It must however be acknowledged, that the dexterous use of one or two fingers may occasionally be employed with great effect to facilitate and expedite the process. When the forehead, for instance, is directed to one side of the pelvis, two fingers might often with advantage be passed up and applied to the far side of the lower part of the face on the other, to lower the chin, and, by a gentle and gradual movement of it, to bring it forwards to engage under the arch of the pubes. This procedure failing, and the demands of the case becoming more and more urgent, it might become the duty of the practitioner to have recourse ultimately to the instrumental resources of his art. This part of the subject will come with more propriety to be considered hereafter.

As to the fourth case, that of a face presentation, with the chin bearing against the sacrum, and the forehead directed to the front of the pelvis, the author would have very little expectation of doing much good in it by the use of any of the mechanical expedients of our art that he has yet seen proposed; excepting so far as to ensure the preservation of the mother's life. Perfect has indeed published a case of this kind, see Perfect's Cases, vol. ii. p. 486, in which he effected the delivery by a dexterous use of the common forceps. His account is, that "the face presented low down in the pelvis, with the chin to the sacrum, the bregma to the pubes, the pains entirely gone, the waters evacuated, and the uterus contracted."

"The position of the head being ascertained, I had the patient placed on her back, with her breech over the side of the bed, and then, with some difficulty, applied the long forceps along the ears, pushed up the head, turned the chin from the sacrum to the left ilium, gradually brought it out from under the arch of the pubes, and in a short time delivered it: the body easily followed, and in a few minutes afterwards the placentæ, united in one cake, with two strings, were excluded." The reader should, however, be apprized that the child, in this plausible case of Mr. Perfect's, was the second of a twin-birth, and therefore necessarily small relatively to the probable capacity of the mother's pelvis. It very possibly might have been eventually delivered quite as well, if not better, without such interference; and, at all events, we find that it only survived its birth THREE HOURS.

All the difficulties and dangers incident to face-presentation cases, are essentially attributable to their mechanically disadvantageous relation to the parturient passage, occasioned by malposition of the fœtal head.

DIFFICULT LABOURS FROM EAR AND SIDE-OF-FACE PRESENTATIONS.—These presentations are of extremely rare occurrence. There are extant several

published tables, professing to give the proportional frequency of all the presentations of the fœtal subject that had occurred within a given range of practice, and during a certain period of time, in which we find not a single case recorded of the presentation of either ear. In the author's private practice he has never met with an example of it; and in that of the Royal Maternity Charity, only one in seventeen years.

On considering, however, the mechanism of such labours, it is not difficult to discover their almost exclusive indication of treatment; viz. that of bringing down, by a gentle rotary movement of the head on its occipito-frontal axis, its vertex, or any other part in the immediate neighbourhood of the vertex, towards the bottom of the pelvis. It is generally asserted by French writers, that this change of position might often be readily effected by the fingers. At all events, it would always be right to make the first attempt in that way. But should the fingers prove too short, or deficient in power, then our common vectis should be substituted, and used much in the same way. The part of the head which should furnish the proper surface of abutment, whether for the fingers or the lever, would be the portion of it immediately behind the superior ear, and as nearly as possible in a line from that ear to the vertex. By a steady bearing upon that part with the vectis, the author thinks that we might generally calculate upon being able to effect as much change of position of the fœtal head as might be proper or at least necessary in the first instance; and very probably all that might be ultimately required to be made in the greater number of cases. By the change of position just supposed, the face would be moved upwards, towards the centre of the superior aperture of the pelvis, and the forehead would probably be directed somewhat obliquely either to an anterior or posterior district of its parietes, according as the head might have been originally situated relatively to those parts. If we suppose this change of position to have been effected, and afterwards the occiput should be found to correspond with any part of the front of the pelvis; then we might very safely presume, that the remaining part of the process would be eventually accomplished, without the necessity of further interference. In the event of the vertex getting to be lodged for a tedious length of time in the hollow of the sacrum, then indeed we should have to calculate upon a very slow progress and a more doubtful issue. The head, however, in this situation, would be perfectly accessible to some of the most effectual expedients of our art. This subject will accordingly be further considered when we come to treat more directly of operative midwifery.

Of certain Practical and Accessional Duties to be attended to by the Practitioner after the Patient's Delivery.—1. As a general rule the practitioner should not leave the patient's residence before she is put to her permanent bed. The reason of this rule is obviously founded on the dangers of inducing hæmorrhage by premature attempts to give her the benefit usually expressed by the phrase "of being put comfortably to bed."

2. If he should have occasion to leave unusually soon, he should assure himself of the uterus being sufficiently contracted to prevent hæmorrhage, and of its having been so contracted for at least half an hour subsequently to the removal of the placenta.

3. He has to examine and report on the state of health and strength, and other physical properties of the child. Defects and malformations of the infant are principally the objects of this rule. Unhappy announcements on this topic should be made to the mother with the utmost discretion as to the time and best mode of conveying them.

4. He should never neglect to leave with the nurse such instructions for the management both of the mother and child as might suffice to direct her conduct after his departure.

5. Dr. Denman also very frequently left written directions with the patient herself, or one of her immediate relatives. This was doubtless in many cases intended to counteract any improper influence which he expected might proceed from the family. All directions in respect to the personal management of the patient should be given as positive rules. Their reason being also communicated might depend on the capacity of the nurse or other attendants distinctly to understand and feel the importance of such instructions.

6. The duty of maintaining steadily a horizontal position during many days after the delivery, should be communicated at once to the patient herself, together with its reason, which should be conveyed distinctly, and impressed strongly on her mind.

7. The medical attendant should visit his patient once daily for the first week after her delivery; and occasionally afterwards as the case might require. The greater number of formidable diseases incident to the puerperal state, occur within this period. At any time therefore within this period it should be made a peremptory duty of the nurse, or other attendants left in charge of the patient, to inform the medical attendant of the occurrence of a shivering fit, or of the entire absence of sleep; of the accession of pain in the groin, or of either of the iliac regions; or of any other indication of the incipiency of a formidable disease.

8. The duties which are the objects of general rules are to be considered as common to all classes and forms of labour.

# CHAPTER XV.

## CLASS II. OF PRETERNATURAL LABOURS.

All preternatural labours are included under our second class. The presentation of the child to the birth is considered as being the principle of the entire class; all presentations, with the exception of that of the head, being comprehended by it. Under the general head of preternatural births we have again a subordinate distribution of some of its principal forms into two convenient subdivisions or orders. Of these, the first is made to comprehend the presentations of the breech and lower extremities; and the second, one or both arms, a shoulder, the back, the nape of the neck, or any other part intermediately situated between the head and the breech. The principle of this division is founded on the fact, that in the one case the child might be safely delivered in the direction of its presentation, with but trifling artificial assistance; whilst that in the other, the mere chance of a living birth cannot be secured without the assistance of art for the performance of one of the most capital operations of midwifery, viz. that of turning.

The following general observations may be considered as applicable to all the varieties of cases comprehended under the entire class of preternatural labours.

1. Some women are liable to be repeatedly or even successively the subjects of preternatural labour.

2. In all the cases distributable under this class in which the delivery is effected at the full period of gestation, the head is the part which is last born.

3. The comparative danger of all preternatural labours is in a great measure imputable to the fact just stated, of the head being the part last born; which arises from the obvious liability of the umbilical cord to fatal pressure, during the abduction of the head through the pelvis.

4. The labours comprehended under our second subdivision of this class are more dangerous than those ranged under the first, by reason of their greater exposure of the umbilical cord to the risk of pressure, and also by reason of the greater skill required for their safe management.

5. A great part of the safety or danger of every labour being universally known to depend upon the presentation being either that of the head in the one case, or that of any other parts of the child in the other, an early knowledge of that circumstance becomes naturally an object of the most lively solicitude. This anxiety is, no doubt, the groundwork of much useless speculation on the subject of presumptive signs of preternatural presentations. See Denman's Midwifery, chap. xiii. § 2. We have already sufficiently described the distinctions to which the practitioner should especially attend.

### OF THE FIRST ORDER OF PRETERNATURAL BIRTHS.

The varieties of presentations, in addition to those of the head, which admit of the process of parturition being performed, and frequently happily completed, in the direction of their presentation, are footling cases, knee cases, and breech cases. All the varieties of parturition comprehended under this order of preternatural births, are eventually resolvable, and indeed actually resolved, into footling cases. For this reason, and on account of their frequency and general importance, it would seem proper to place footlings at the head of their class, as being entitled to our first consideration.

### OF THE MANAGEMENT OF LABOURS HAVING FOR THEIR PRESENTATION ONE OR BOTH OF THE LOWER EXTREMITIES.

The frequency of this variety of labour in proportion to the entire number of births is as about one in eighty-one and a half.

The first duty incident to its correct professional management is to ascertain the fact of the presentation. This is not ordinarily a difficult duty; for one or both feet are found presenting within the orifice of the uterus, or at the upper part of the vagina, soon after the commencement of the labour. The examination instituted for the positive ascertainment of the fact of the presentation should be made with extreme caution if the membranes be unruptured; lest by any incautious proceeding in this matter the membranes should be unintentionally ruptured, and it should be thus prematurely discovered that a hand might be the presenting part instead of a foot. But these presentations may in general be very readily distinguished through the membranes, without exposing these delicate tissues to the slightest risk of being ruptured. The principal duty of the practitioner at this early period would be to avail himself of the gentlest use of the taxis during the absence of pain, and therefore of course during a relaxed state of the membranes. Passing his finger thus gently along one side of the presentation, he would speedily encounter a portion of it, which he would have no difficulty in recognising as a heel,

and then along another part of it, which he would be able, with equal distinctness, to ascertain to be toes. This distinction may be generally equally easily made, when the presentation does not project in the form of the finger of a glove as when it does. In some of these latter or non-elongated presentations, the orifice of the uterus in the mean time happening to be considerably dilated, a hand with its longer digits may be distinctly felt to exert its little living powers, in the immediate neighbourhood of one or of both feet.

2. The next duty to be attended to in the management of footling cases is to discover the POSITION of the presenting part; which would indeed be a means of discovering the position of the entire child in utero. This duty however should not be undertaken at a very early period of the labour, inasmuch as it might lead to a premature rupture of the membranes; and there is no particular advantage in obtaining a precise knowledge of the position at the commencement, or at a very early period of a labour under these circumstances. The French, who have taken more interest in technical distributions of some of the facts of obstetrics than the practitioners of this country, have referred the several relations of different parts of the lower extremities, in our present class and order of labours to the parietes of the pelvis, into FOUR PRINCIPAL POSITIONS, which they have therefore constituted the principle of so many distinct species of labours.

In the first of these positions, the heels are made to correspond to the left side of the pelvis, with a little inclination to the acetabulum. The toes will therefore of course be determined towards the right side of the pelvis and towards the sacro-iliac junction. In the second position, the heels are made to correspond with the right side of the pelvis and the right acetabulum, and the toes with the left side and left sacro-iliac junction. In the third position, the heels are turned towards the pubes and the toes towards the sacrum. The fourth position is directly the reverse of the third; the toes, and therefore the face and entire front of the child, being then parallel, or in the same direction with the front of the mother.

3. The next duty devolving upon the practitioner, which although of a purely negative character is one nevertheless of very positive importance in practice, is that of abstaining from all manual interference for the furtherance and supposed assistance of footling cases, UNTIL AFTER THE NATES SHALL HAVE CLEARED THE VULVA. But nature has supplied a good purchase in the presenting part in this particular case, for giving any amount of assistance by traction which might be required. Why therefore should not her overture be accepted? The answer is easily supplied. Parturition, under its ordinary and best circumstances, is a natural process, and requires not the assistance of art to ensure its best interests. Again, parturition under these circumstances is naturally a slowly progressive process, and experience has long established, the impropriety and disadvantage of obtruding upon the operations of this function, when already being safely and well performed, any premature, unnecessary, or officious assistance.

The presentation of the feet, or even of one foot and leg, would seem to be a condition of labour which ought to ensure a satisfactory progress of the operation, until the bulkier parts of the child might engage in the parturient passage. The author is not aware that he has ever met with a case of presentation of the feet at an early period of the labour, in which the process has become eventually suspended or arrested, without the interposition of some sufficient and ascertainable impediment. Nature has established a due and proper balance between the propellent powers of the uterus and the resisting powers of the parturient passage. Experience proves that the latter seldom fails to supply the former for their propulsion, in sufficiently good time to ensure the progress of footling births, AT LEAST DURING THEIR EARLIER STAGES. We may indeed remark, that this law is as constantly and uniformly observed in cases of presentation of the lower extremities, as it possibly can be under any circumstances of human birth. What then should be our inference in the event of any delay in the progress of footling births? Why surely either that the propellent powers might be too feebly exerted, or that the orifice of the uterus might be affected by an unusual degree of rigidity. It is a very common practice in cases of tedious labour, especially with nurses and lookers-on, to charge the pains or the uterine contractions with not being sufficiently vigorous: and this is often the case when the business of the labour is going on with the utmost prosperity. In natural labour, under these circumstances, all the parties here referred to are obliged to submit to the dispensation of nature, probably much wiser than any they could prescribe or execute, until the resisting tissues shall have been sufficiently acted upon by the propellent powers, to admit of the birth eventually taking place without any officious and premature assistance of art. How thankful ought our profession to be, and how doubly thankful ought all child-bearing women to be, that nature has attached no handles, or levers, of any kind to the fœtal head! But in footling births the presenting part of the labour is, unfortunately, in this respect itself a lever of prodigious and fatal power. "In the first order of preternatural labour," observes Dr. Denman, "two very different methods of practice have been recommended. By the favourers of the first method we have been directed, as soon as the presentation was discovered, WHATEVER might have been the state of the labour, to dilate the parts, then to pass the hand into the uterus, and to bring down the feet of the child; or, if these were originally in the vagina, to grasp them and to extract the child expeditiously, making the labour wholly artificial, without waiting for the natural expansion of the parts, or for the expulsatory action of the uterus. Would it not argue a want of humanity, say they, to leave a woman for many hours, perhaps a whole day, or even a longer time, in pain and anxiety, when we have the power of extracting the child in a very short space of time; by which the violence of the pain would be lessened, or its duration at least would be very much shortened? Others, on the contrary, have considered this practice as founded on a vulgar and pernicious error, which makes no distinction between the slowness and danger of a labour. These have considered

the presentation of the breech and inferior extremities as generally safe; and have taught us that such cases ought to be, and with security may be, left to the efforts of the constitution; no kind of assistance being required in the first stage of the labour; the mother at least not suffering more than in a presentation of the head, and the chance of preserving the life of the child being by this cautious proceeding much improved. Of the superior advantage of either of these two methods, it is only possible to judge by the general event of cases of this kind. If this should prove, which I think is scarcely to be doubted, that less injury is done to the mother, and that there is a better chance of saving the life of the child by suffering it to be expelled by the natural powers, than by artificial delivery, there can be no hesitation as to which of the methods preference should be given: for the charge of the want of humanity cannot properly be laid against a proceeding, which most frequently terminates happily for both." Denman's Introduction to the Practice of Midwifery, chap. xiv. class 3, sect. 3.

The practice recommended by the former of the above classes of practitioners, as stated by Dr. Denman, cannot be too much condemned; whilst that of the latter, if adopted exactly as represented by the same writer, is liable to serious objections. If much traction is resorted to in the early stages of a labour, the extremities will be brought down by dint of force, during a period of the labour when this artificial assistance can receive but little co-operation, from spontaneous relaxation of the orifice of the uterus, and other resisting tissues of the parturient passage. The eventual effect of this procedure must be, when the breech shall have thus per force been made to engage in the pelvis, that the abdomen of the fœtus, including of course the umbilical cord, would be comprehended within the rigid parietes of the yet insufficiently developed neck of the uterus; where the labour might become arrested in its progress, for a length of time which might more than suffice to destroy the circulation in the cord. But if we suppose that the child might escape this danger, it could scarcely be expected that it should survive, under such circumstances, during the unassisted passage OF THE HEAD THROUGH THE PELVIS. To feel the precise force of this statement, the reader it is obvious must distinctly understand the circumstances here presumed; of which the chief may be represented to be a rigid and an insufficiently developed state of the neck of the uterus, and in short of the whole parturient passage. If then we assume this condition of the neck of the womb, it would follow, AS A MATTER OF COURSE, that the shoulders might not be brought down into the pelvis without much difficulty and loss of time. But if we suppose the umbilical cord to retain its pulsation, even after the supposed descent of the shoulders; still the head would be to be brought down into the pelvis, during a continuance of an insufficient development of the parietes of the parturient passage. Our experience in the management of some cases of turning, those especially rendered necessary by profuse hæmorrhages occurring in the absence or during the early stages of labour, abundantly warrants the assertion now advanced, viz., that in cases of insufficient development of the soft parts, and in

labours of the class now under our consideration, the bringing down of the head into the pelvis is often attended with great and fatal difficulty. In certain cases of complicated labour there may be no choice as to the adoption of the practice here supposed, that of dilating the parts with the hand, bringing down the feet with more or less of extracting force, and of hastening every stage of the labour: although, even in such cases, the author is of opinion that much unnecessary violence is too often exerted; which therefore might be most advantageously omitted. But the hasty abduction of the more bulky parts of the child through the pelvis, during a rigid state of the soft part, and especially before a pretty ample development of the orifice and neck of the uterus shall have taken place, must be a wanton exposure of at least ONE valuable life to the liability of being destroyed.

The second principal duty which devolves upon the practitioner in the management of footling cases is to ascertain, and if necessary to change, the position of the child, relatively to the pelvis of the mother. As soon as the feet shall have fairly entered into the vagina, the practitioner will be able at once to ascertain the position of the entire child by the direction of the toes. As the position shall be found to be thus very simply ascertained, so it will continue to be with very trifling variations during the whole of the labour. In the first, second, and third positions, the heels of the child corresponding, as we have already seen, with the anterior and antero-lateral parietes of the pelvis, the toes will be found directed in all these positions towards the back and sacro-iliac junctions of the pelvis of the mother; hence will also be directed towards the back of the mother, the face and all the front surfaces of the child. With these positions, the labour may be permitted to go on, without much interference of art towards effecting changes in the relative situations of the fœtus. The fourth position is made to include the several varieties of position having the toes directed to the front of the pelvis. When the toes are directed to the posterior parietes of the pelvis, including the first three positions, experience has long proved that the fœtal head enters into the cavity of the pelvis with great comparative facility. The chin readily finds its way to engage in the pelvis along the tract of space on either side of the promontory of the sacrum. The face subsequently finds ample room in the hollow of the sacrum, along which it is made to sweep with equal facility and certainty during its further descent; whilst the back of the head is turning as it might be on a pivot, furnished for it by the arch of the pubes. In the several cases of footling births included within the range of the first three French positions, very little change is required to be effected in order to facilitate and to promote the safety of the process. Hence it is only the FIRST PART, of the second principal duty, that can in those cases require the practitioner's attention. But the case is different when the position is found to be the reverse of those just mentioned, viz. one of those in which the toes of the child are directed towards the front of the mother. The fœtal head, if allowed to engage at the brim of the pelvis, without any change being previously effected in its position

when thus situated, is found to make its descent into the pelvic cavity with extreme difficulty, even when it can be made to effect its entry at all. If, on the contrary, the child should prove one of large growth, and its head of corresponding magnitude; it is probable it might not engage at all, even with the aid of any amount of traction which it might be deemed expedient to furnish; but become permanently locked, or at least arrested for a dangerous length of time, within the parietes of the pelvis. The placental portion of the umbilical cord being attached to some part of the interior of the uterus, and the other being continuous into the abdomen of the child, it is obvious that some intermediate portion of it would be exposed to fatal pressure between the head of the child and the brim of the pelvis. The child's fate would be thus determined, although no undue interference might be resorted to, at an early period of the labour, in the event of assistance being withheld at a more advanced stage of the process; which we shall presently see might then be most easily extended, so as to effect an entire change in its position relatively to the parietes of the pelvis. From what has been already stated, it must appear quite obvious that the required change of position should consist in placing the child's head in such a situation as shall cause the face to be determined to the back of the mother before it shall commence its descent into the cavity of the pelvis. To effect this object at the least possible risk of exposure of the umbilical cord to dangerous pressure, the change of position should be made immediately after the expulsion of the breech through the os externum. Before this result, it would be quite useless in the greater number of cases to make the attempt, by means of any purchase which the practitioner could have of the mere legs, or even of the thighs of the child, without also the breech; inasmuch as changing the direction of the toes or of any part of the lower extremities, could not be expected to make any change in the position of the breech, nor therefore of course in that of the shoulders or head. The moment, on the other hand, the medical attendant obtains the possession of the breech and thighs, he is furnished with the best leverage, for the speedy and effectual completion of the birth, which the mechanism of such a labour can afford him. With this power and at the time stated, he accordingly forthwith proceeds to effect the required movement of the body of the child; so that its face, and front surface generally, shall be determined towards either of the sacro-iliac junctions or back of the mother. It is to be observed that the part of the child's body which must be occupied by the pelvis immediately after the expulsion of the breech, viz. the portion of it intermediate between the breech and the shoulders, being nearly mathematically circular, must obviously contribute to make the required change of position comparatively easy to be accomplished; which indeed should operate as a strong inducement to the practitioner, to make his knowledge of this fact available to his object just at the juncture proposed.

The third principal duty of the practitioner is to favour the descent of the shoulders into the pelvis by skilfully disengaging the upper extremities. After

having effected the required change of position of the child, WHEN NECESSARY, he would then have to pass up two fingers of his right hand along the back of the fœtus, to the top of one of the shoulders, viz., of that shoulder which he might find most accessible; and thence over the corresponding arm as far as the elbow. Insinuating his fingers into the bend of the elbow, he would furnish himself with an effectual purchase for bringing down the hand and fore-arm sweepingly over the face, which however he should do with great care and gentleness, so as not to expose the perineum to unnecessary pressure. The other arm is to be brought down in the same way. The second is generally more easily brought down than the first.

As soon as the arms shall have thus been disengaged we must have the command of the head. If in a good position, it will sometimes engage in the pelvis by simply drawing it adroitly in the direction, of the axis of the brim; the breech being made use of as a handle or purchase for this purpose. But in many cases the bringing down of the head into the pelvis will not be thus easily effected. In such cases therefore we have to carry our right hand to the nape of the neck, and to pass one or two fingers of it to one side of the neck, and the rest to the other, so as to furnish ourselves with a firm purchase of the shoulders. Two fingers of the left hand must then be passed into the mouth to depress the chin, and to bring it into close approximation with the chest; which will have the effect of causing the long axis of the head to be placed in correspondence with the axis OF THE BRIM of the pelvis; or at least of bringing it into sufficient approximation to it. Having completed this double purchase, the forehead should be determined to one of the sacro-iliac junctions; a moderate extracting force, accompanied by a trifling alternate action from side to side, being made use of at the same time. This is the common mode of proceeding. But sometimes an arm will come down with the body. Therefore, when the knees shall have just cleared the external orifice, the hand should be introduced, or partially introduced, to feel for a hand; and if one is found, it should be kept close to the child's body to secure it against the accident of fracture. The other arm is to be brought down in close apposition to the opposite hip and thigh on the same principle.

5. The last duty incident to the management of footling births, is the extraction of the head from within the cavity of the pelvis. The head, when it shall have got into the pelvic cavity, will cease to be within the reach of much further propellent force on the part of the uterus, and will therefore require to be extracted by the practitioner; and this duty should be performed speedily, to prevent pressure of the cord; but at the same time without violence or rashness.

OF BREECH PRESENTATIONS.—Labours having the breech for their presentation, form a second variety of the class and order of births of which we are now treating. The breech, like the feet, may present in different positions relatively

to the parietes of the pelvis. At the commencement of labour the breech usually presents a very large expanded surface, which would seem to require a long time to be sufficiently PACKED to enable it to engage readily in the brim of the pelvis. The several presentations of the breech are usually distributed into the following four positions. The first is, when the back of the child is directed towards the left acetabulum of the mother. In proportion as the presenting part descends, under the circumstances of this position, its greatest breadth becomes parallel with the antero-posterior diameter of the outlet, the left hip placing itself obliquely under the pubes, and the right in the hollow of the sacrum.

In the second position of a breech case, its greatest breadth is also parallel to one of the oblique diameters of the brim. The child's back is directed towards the right acetabulum, and of course its abdomen towards the left sacro-iliac junction. It engages by the same mechanism as in the first position, and advances precisely in the same manner; excepting that when about to enter into the outlet of the pelvis, the right hip, instead of the left, places itself under the arch of the pubes. The left hip being determined towards the sacrum makes its descent along the curve of that bone, as well as along the coccyx and the entire depth of the perineum; whilst the right hip has only to make a slight advance in front, so as to double, as if by an almost insensible movement, the edged arch of the pubes.

In the third position of the breech, the back of the child corresponds with the abdomen of the mother, whilst its anterior surfaces are directed towards the back of the mother. It rarely happens that the birth makes much effectual progress as long as the breech continues in this position; whilst during the movement immediately to follow it still more rarely happens that the chin and forehead are not determined towards one or other of the sacro-iliac junctions which indeed they should be, by the resistance offered to their previous course by the promontory of the sacrum. Thus the head is made to engage diagonally in the superior aperture, and to place itself precisely in the same situation relatively to the pelvis as when the feet present in the first or second position.

The fourth and most unfavourable position of a child presenting by the breech, is when its front surfaces are parallel with those of the mother; its back being in the mean time directed towards the back of the mother. A child that might pass in any of the three first positions with moderate facility by a due exertion of the natural powers, might probably not pass at all in the fourth, without the aid of so much extra force as would almost certainly compromise its life. In this case, it wedges itself most inconveniently within the pelvis; the relations of the several dimensions of the breech and the pelvis not being coincident. When the pain is great, the breech is forced so low down into the pelvic cavity, as to give one the impression that by a few more efforts it might make its way through altogether; but it again as certainly recedes when the uterine exertion ceases. The long dodging and protractedness of the process are such as almost always to compromise the child's life.

Of the Management of Labours having the Breech for their Presentation.—The practitioner's first object should be, to ascertain the fact of a breech presentation; and the second, to distinguish its position. Labours under the circumstances of a breech presentation are so slow in their progress during the earlier stages, that many hours usually elapse before the practitioner can assure himself of this fact. In a breech case presenting distantly in one of the three first positions, which however are comparatively favourable positions, the arms in all of them being to the sides of the pelvis; the presentation is sometimes exceedingly obscure, especially before the rupture of the membranes. The part for which the breech is most apt to be mistaken in these cases is the head; which latter however should be distinguished by its own characteristic properties, the negation of which properties being assumed to indicate, at least the probability of, a breech presentation. By a little care and cautious perseverance, we may also distinguish the anus and the genitals, as likewise the sulcus between the genitals. In the male, the scrotum is sometimes much swollen, as has been already intimated. In the fœtal state there is naturally a communication between the abdomen and the tunica vaginalis, which suffices to account for the swelling here alluded to. But this does not cause any difficulty.

The position of the presenting part will serve to indicate the situation of the child in the uterus; the fœtal abdomen and of course the folded extremities being in the same direction with that of the genitals. In some cases when the practitioner has been in doubt of the actual presentation, he has found it out on withdrawing his finger, by discovering that it was tinged with meconium. When the child enters the pelvis by this presentation, there is great pressure made by the uterus either directly or indirectly on the abdomen, which has the effect of squeezing the meconium out of the intestines.

In the progress of the descent of the breech into the pelvis, it should be made a chief object of attention to ascertain the state of the orifice of the uterus. If there be pains, there can be no indication for early interference; and if not, the principal indication would be to wait, and to sustain the patient by administering to the constitutional symptoms.

In the further progress of the case, attention should be always paid to the security of the navel-string. The cord is not so liable to pressure in this presentation as in that of the feet. But when the breech shall have descended as low as the external parts, a portion of the navel-string may possibly escape, so as to be exposed to compression between the thighs. Here we must give some assistance, otherwise it could scarcely be expected to escape danger. If it should be necessary to give this assistance before the entire breech shall have escaped from within the cavity of the pelvis, an index finger should be passed into the child's groin, with which the presenting part should be drawn down in correspondence with the direction of the outlet of the pelvis. When a moderate extracting force shall thus have been applied

to one groin, the same advantage should be extended to the other; and this action should be alternated, either until the extraction shall have been completed, or until it shall become necessary to supersede the use of the finger by the greater power of the blunt hook. This latter power should be used very rarely, and then only with the greatest caution and dexterity. When the breech shall have been born, the lower extremities should be carefully disengaged, in order that the entire trunk may be speedily made available for rectifying, when necessary, the position of the head. We sometimes find the child's back pretty directly determined to one side of the mother, and the hips to the symphysis of the pubes and the sacrum. This position might be obviously promoted by a cordiform shape of the brim of the pelvis. In such cases, nature is usually competent to propel the entire breech through the external parts without assistance. But immediately upon this result, the breech should be taken hold of, and so far changed in its position as to bring the back into direct correspondence with the abdomen of the mother. It then becomes a case to be managed on the usual principles of footling births. In the absence of sufficient uterine action the practitioner must give some slight assistance. Recollecting the situation of the thighs, he would have to pass up a finger or two of one hand into the groin, and of the other along the sacrum, and then to draw down, principally with the finger or fingers introduced behind. When we shall have thus effected the extraction of the breech, the back, as in other cases, would require to be determined towards the front of the mother.

Let us suppose, in the next place, the fœtal genitals to correspond in their direction with the front of the pelvis. This would constitute a breech presentation in the fourth position. If the child were small, or of a very moderate size, it would pass probably without much difficulty in its existing position. But if, on the contrary, it were of full size, it would require some assistance; or it might not pass at all, or not in time to ensure the preservation of the child's life. In a case of this kind, a strong pain may often be found to bear on the presenting part, and to propel it deeply into the pelvis; but, on the retirement of the pain, it is found as certainly to mount up again. In cases of this description, nature should be allowed time to exert herself fully. After waiting for adequate relaxation of the soft parts, the fingers must be passed up to the groins in the manner already directed, and the back must be determined towards the front of the pelvis, and the process completed by traction of the presenting part. The child however proving very large, and the pelvis small, we might not be able to effect our purpose by the fingers alone, and a case would thus arise for the use of the blunt hook. The hook part of that instrument, rather moderately curved, should be insinuated cautiously along a directing finger or two of the left hand, in the same manner as the living finger in the former case, to effect the movement required for the extraction. With the blunt hook thus applied, and antagonized by one or more fingers of the left hand, the practitioner would find himself competent to exert even more force of extraction

than he might deem safe or prudent to use. We have accordingly to draw down with a very MODERATE DEGREE OF FORCE, which we have to apply alternately first to one groin, then to the other, until the greater part of the breech shall have made its exit; after which the hands exclusively are to be made available for bringing down the lower extremities; which being effected, the case of course will remain to be further treated on the principles to be attended to in the management of footling births.

OF KNEE PRESENTATIONS.—The author has never met with an example of presentation of the knees. The tables which profess to notice them have usually given their proportional occurrence as one in four or five thousand births; a result however, by reason of the extreme infrequency of its data, which must be considered liable to much uncertainty. They are cases which can require no peculiarity of treatment, and the only duty of the practitioner would be to abstain from all interference until the feet shall have protruded.

## OF THE SECOND ORDER OF PRETERNATURAL LABOURS, INCLUDING ALL VARIETIES OF CROSS-BIRTHS.

The peculiarity of these births is, that they present by parts of the fœtus intermediate between its breech and head. Under these circumstances, it is a fact which has been long established, that the child cannot pass in the direction of its presentation, and therefore requires the interposition of art for changing that presentation. The operation by which such a change of presentation is effected, is called that of TURNING.

The operation now technically called that of turning, was introduced into our profession at an early period of the seventeenth century, by Ambrose Parè, in the midst of very strenuous opposition to it by the surgeons of that time. It has been said, that Philomenes recommended the same practice. However that may be, it is certain that the credit of its actual introduction into practice must remain with Parè, although it came not to be generally adopted until after his death.

Hippocrates proposed in cross presentations to shake the parturient subject until the child should be shaken into a right position; and he illustrated this idea by putting an olive into a bottle admitting of its passing only longitudinally and not transversely; which therefore he could not get away, until by shaking the bottle it was brought into its neck or mouth LONGITUDINALLY.

Celsus, who wrote about a hundred years after the Augustan age, directed, that in presentations of the lower extremities, the feet should be brought down; but on the subject of actually changing the presentation he gave no directions.

The only notion entertained by the ancients of any operation of turning was that of bringing down the head; which modern experience has proved to have been little calculated to improve the interests of our art.

Turning, in modern practice, is performed in two opposite states of the uterus; namely, in those of comparative relaxation, and of great rigidity of that organ. Its state of relaxation precedes, and seldom goes long beyond, the escape of the waters; whereas its opposite state may be usually considered as commencing with or soon followed by that incident. As this difference of condition of the uterus is one of great importance in its influence upon the facility or difficulty of the operation of turning, it should be considered as a valuable index for the direction of practice, as well as a prominent boundary line, by the distinction which it creates. In the relaxed uterus the operation of turning is rarely attended with much difficulty; whereas, during much rigidity and violent contraction of that organ, it is usually performed with great difficulty and no inconsiderable danger.

Of Rules for the Proper Performance of the Operation of Turning.—1. A careful examination should precede this operation, in order to ascertain with the utmost possible correctness the situation of the presenting part of the child relatively both to the uterus and the pelvis. Inasmuch as the membranes of the ovum are sometimes exceedingly susceptible of rupture upon the slightest touch, it is to be observed that such examinations should be performed with great care, and in the absence of expellent efforts of the uterus.

2. In ordinary circumstances, the operation should not be undertaken until after a pretty complete development of the orifice of the uterus; the membranes being here presumed not to have given way at an early period of the labour. The early escape of the liquor amnii should indeed be considered a serious misfortune in cases of this kind.

3. The professional attendant, before he undertakes to operate, should generally, either with or without consultation, communicate freely and honestly with the friends of the patient, on the probabilities of the issue of his case; inasmuch as its consequences might ultimately prove of serious importance to his own reputation. The elements of such a prognosis have first for their object the interests of the mother, which should rarely be compromised; and secondly those of the child, which must in all cases be considered subordinate, but nevertheless sufficiently important to make it a bounden duty on the part of the practitioner never wantonly to sacrifice them.

4. Directions should be given in detail for the due preparation of the patient, as to any alterations in dress, position of her person, bed-furniture, and also of all conveniences and necessaries likely to be required during the performance of the operation.

Turning may be considered, either as the result of a necessity founded upon the existence of a cross presentation of the child to the birth, and such as cannot under any circumstances, at the full period of gestation, be dispensed with; or it may be performed, as it often has been in modern practice, as the best measure to be adopted under certain circumstances and varieties of complicated labours; although such labours might have the head of the child for

their presentation. Of this latter class of cases we shall take due notice when we come to treat of them specially under their respective heads. Before the operation of turning is undertaken, the patient should be conveniently placed on her left side, with her head rather low, obliquely across the bed, and with her breech as near the edge of it as possible. In order to ensure the permanence of this position, it might often be required to place under the sheeting, and without the knowledge of the patient, a pillow or some other article of proper bulk and softness, to impede her receding movements. This will be often found a provision of great importance to the success of the operation.

In the relaxed state of the uterus, and in the event of the orifice of that organ being already considerably developed, it will generally be found tolerably easy to introduce the hand into its interior; but before that attempt is made, the practitioner should be careful to make his choice of the hand best adapted to the case. In cases having the extremities of the child determined towards the abdomen of the mother, the right hand should be made use of for the operation; whereas, in those having its front surfaces corresponding to the back of the mother, the left will be found best adapted for its performance. In all cases of first births under these circumstances, the introduction of the hand into the vagina might be expected to be attended with considerable difficulty; and that part of the process should be performed with the utmost slowness and gentleness on the part of the practitioner. The hand is to be introduced into the os externum in the form of a cone, digitis in uno junctis. The external aperture is to be gradually developed by means of this manual wedge; and the wedge, as the reader is well aware of, is the most efficient mechanical power; the efforts of propulsion being repeated from time to time in the gentlest manner. It will be enough at first to introduce the three first fingers. Presently the little-finger will be easily admitted, together with the others, as far as the second joints. After another interval of uncertain duration, the parts will be found sufficiently dilated to admit of the hand as far as the third row of joints. In a short time subsequently, they will admit of the thumb being added to the cone formed by the fingers; and after having been accustomed for a few accessional minutes to the presence of the thumb, will admit of the introduction of the entire hand into the interior of the vagina, without putting its parietes injuriously on the stretch. If the orifice of the uterus be supposed to be thus amply dilated, the hand will find its way readily into the body of that viscus; which indeed it should be a great object to accomplish without causing the rupture of the membranes. It should next be gradually conducted on the outside of the ovum, as far as the feet, which it would be able to feel through the membranes, and which it should therefore seize, including the quantity of the membrane immediately interposing within its grasp. This seizure will usually have the two-fold effect of causing the membranes to be ruptured, and of discharging the greater part of the liquor amnii. Whilst this latter incident is taking place, the practitioner may accomplish the greater

part of his object by bringing one or both feet into the vagina, or even, as might often be expected, as far as or beyond the os externum. If both feet are found within the uterus, so near each other as to be readily grasped together, it is usually considered the better practice to bring BOTH down at the same moment, and by the same effort. The change of position of the child will thus be found to have been already completed if we suppose the uterus, as indeed we have actually supposed it, to have been in a state of relaxation. The case is thus become identified in its conditions with those of a footling birth, and therefore the subject of similar ulterior treatment. If the feet be found not to be so nearly together in the uterus as to be easily embraced within the same grasp, the author considers it sound practice to take hold of the foot which he finds most accessible, and to bring it down into the vagina unaccompanied by its fellow. One extremity will furnish a sufficient purchase to enable the practitioner to give all the assistance that the case may stand in need of. It may indeed be generally presumed, that under the circumstances here detailed, the operation may often be completed without interference with the circulation in the cord; which should be considered as furnishing a good general rule for entrusting the NEXT immediate stages of the process to nature.

When we have to turn, under the circumstances of a uterus in a state of RIGIDITY, which forms incomparably the most important variety of the duty now under consideration, the case is not to be thus easily disposed of; as it will often present difficulties of no slight moment to the operator, and expose the patient to no inconsiderable danger. Hence the propriety in cases of this description of forming a correct prognosis, and of communicating a very cautious one as to the probable or even possible result of the operation of turning, before it is undertaken. This, it is obvious, cannot be done without taking an ample view of the conditions of the case. These would naturally distribute themselves under some such considerations as the following. 1. The period of commencement of the labour. 2. The period of discharge of the liquor amnii. 3. The state of the orifice of the uterus at that time. 4. The precise character of the presentation. 5. The amount of excitement of the heart and arteries. 6. The degree of contractedness of the uterus. 7. The existing amount of descent of the presenting part. 8. The condition of the parturient organs as to temperature and intumescence. 9. Any constitutional or other changes, that may have supervened upon, or been produced by, the actions of labour.

It is always a condition of the operation of turning, under the circumstances of a CONTRACTED uterus, that the liquor amnii shall have escaped; inasmuch as the womb is not competent to contract to the full amount of its capacity for that action, whilst still distended by the waters of the ovum. It is, however, a fact well known, that the contractions here spoken of come on usually very gradually, subsequently to the rupture of the membranes. In many cases, we may turn moderately easily, although five or six hours shall have elapsed: and

we may generally calculate upon a comparative suspension of at least any STRONG contractions of the uterus, for an hour or two after a spontaneous discharge of the waters. If therefore a practitioner be consulted at this period, he may expect to be able to introduce his hand into the uterus with moderate facility, provided the orifice of that organ be sufficiently dilated. But it often unfortunately happens, that we have to deliberate upon the operation of turning many hours after the escape of the liquor amnii, although the orifice of the uterus might be still in a state of great rigidity. Should such labours be allowed to become protracted, the change of position of the child in utero would be rendered eventually comparatively difficult; whilst on the opposite view of the case a premature attempt to introduce the hand might have the effect of compromising the state of the circulation in the cord. The author would propose, in a case like this, to proceed to the operation, in the course of a few hours after the escape of the waters; although he might have to use some force to effect the dilatation of the orifice of the womb. Before, however, he entered upon this duty he would premise a full and free bleeeding, with the view of predisposing the os uteri to dilate more readily to his purpose. After having introduced his hand into the vagina, he would dispose of it as in a former case relatively to the os externum, into the form of a cone. He would then proceed to introduce this cone by very slow and successive stages, through the os internum. This process might occupy one or more hours, as the part might be more or less rigid. The practitioner's great object should be to effect his purpose with as little irritation or contusion of tissue, from the application of force, as might be compatible with his object. It is a good general rule not to press the hand strongly against the parietes of the orifice of the uterus, DURING a pain; but simply to maintain passively the advantage previously possessed. The orifice of the uterus, having obtained a sufficient amount of dilatation, to admit of the safe and easy passage of the hand through it, the practitioner will find himself in a situation to judge, more correctly than he previously had been enabled to do, of the position of the child in utero. That point he would then therefore have carefuly and finally to determine. He might, from the discovery which he would have then for the first time an opportunity of establishing, be forced to come to the conclusion, that he would have to withdraw the hand which, from not knowing the precise position of the child sooner, he had first used; inasmuch as its further use might not be compatible with the subsequent mechanical treatment of the case. For example, if after passing the hand into the womb, he should find it introduced into that part of it from which he might not be able easily to reach the feet, it would be better to withdraw that hand and introduce the other in its stead: and this supplies a practical exemplification of the rule usually given as to the choice of the hand to be used in the operation of turning in different cases. The rule is as simple as it is practicable, and should never be neglected. After introducing the other hand, which should be conducted closely to, and in a flat form over, the surface of the child, as far as the feet; and the foot or feet having been distinctly recognised

by the proper distinctions to be attended to; an attempt should next be made to grasp one or both feet, or rather to take an easy purchase of them between the fingers and thumb, without closing the hand into a fist, as that might often be attended with great difficulty and perhaps with some degree of danger. All this should be endeavoured to be accomplished, without involving the cord in the risk of being included in the practitioner's grasp. Having got one or both feet within the sort of purchase now supposed, the hand, together with the limb or limbs of the child, is to be withdrawn; which, notwithstanding the imperfect nature of the purchase, is usually to be effected without any considerable difficulty. By this part of the manœuvre, however, the change of the presentation is not effected, nor are the feet brought down beyond the lower part of the vagina. Hence it becomes necessary to obtain a securer hold of the extremities, than the one now described, before the actual turning can be accomplished. This is to be done by placing a ligature over the child's ankle or ankles. The practitioner's hand having been brought down into the vagina, as already described, a doubled riband is to be thrown over the wrist of the operating hand by means of the other hand, and drawn into a running noose, which must be passed gradually over the hand, so as to embrace the child's ankles. This part of the mechanism may be expected often to prove tedious and difficult. It is, however, to be done, without inflicting any serious injury on the tissues of the mother. The noose having been drawn tightly round the child's ankles, the hand of the practitioner is thus set at liberty; and room is furnished for the other hand to be carried up to the fœtal shoulders, there to be employed as a levator or propellent power. When the change of position is to be effected, the originally presenting part of the child is to be propelled from the brim of the pelvis upwards, by one hand; whilst the foot is brought down by adequate traction with the other. The author has met with only one instance, in the course of his experience, of his entire failure to accomplish the operation of turning in the way he has now described; although he has met with many single examples, where attempts of the same description had failed, in the practice of some of his friends. A provision for the management of such unfortunate cases will be detailed in our last or instrumental class of labours.

It not unfrequently happens that the natural difficulties incident to the class of labours now under consideration have the effect of producing extreme excitement of the heart and arteries; whereas such excitement of the great organs of the circulation, and vehement action of the uterus, are in many cases mutually proportional, and equally conducive to the production of the difficulties to be encountered in the mechanical treatment of such examples of cross-births. Hence it is our duty in a large proportion of cases to subdue the tone of the violent actions in question, before we attempt to effect the operation of turning. This object is to be attained by two principal measures, namely, first, by the abstraction of twenty or thirty ounces of blood, or even more, in cases of extreme excitement; and immediately afterwards, by the exhibition of a

full dose of opium. These measures being premised, the author can scarcely suppose that an adroit operator could fail in his attempt to turn, even without at all compromising the soundness of the maternal tissues. The operation is, however, not to be safely performed in the free and easy manner in which some boasting and ignorant practitioners are too much in the habit of speaking of it; nor is it to be done safely in a SHORT time; be that half an hour or any other similar measure of time, which the same inexperienced egotists may choose to name. Under the circumstances we are now describing, it is to be considered as one to be performed most slowly. Forcible or quick movements are especially calculated to produce contusion, and even rupture of delicate living tissues. An attempt, for example, to pass the hand into the uterus, in the space we will suppose of ten minutes, in a rigid state of the orifice of that organ might well be expected, either altogether to fail, or to be followed by more deplorable consequences; whereas the hand might be passed up into the same uterus in the space of one or two hours, with perfect safety and often with perfect prosperity of result. One can scarcely believe the amount of advantage to be obtained by slow progress in the performance of operations of this kind, until experience comes to put us in possession of the fact. We should follow nature herself as our model in the management of rigidities of the uterus. In natural labours the head of the child is the wedge which is employed, and we observe in cases of rigidity how very slowly it accomplishes its object: and nevertheless we find that it very rarely fails to effect it. In the class of cases which we have now to deal with, the practitioner's hand is the instrument: and is it to be expected that the artificial instrument could SAFELY effect in a quarter or half an hour, what nature often chooses not to do in less time than a quarter or half a day? Dr. Hunter used to advise his pupils to consider their turning patients as being asleep, and to perform the operation at every stage of its progress, as if they must not awake them.

A medical practitioner is occasionally consulted in the more deplorable cases of this class, when it might be scarcely of use to attempt the performance of the operation, with any other object, than to effect the termination of a dangerous or tempestuous labour. Let us suppose an extreme case; such as that of a patient who has been in labour three or four days, with a swoln arm of the child presenting at the vulva, the greater part of the shoulder wedging deeply in the pelvis, the soft parts of the mother greatly tumefied and inflamed, the discharges from the uterus filling the room with a fœtid stench, the abdomen of the poor woman greatly enlarged but nevertheless hard and tender to the touch, the countenance bloated and the complexion of a purply venous hue, the remnant of a high-toned action of the arteries now sunk into a state of atony; add a pulse of a hundred and fifty or a hundred and sixty strokes in the minute as the measure of its frequency, and all accompanied by a low muttering delirium: suppose such a case, and what can any intelligent person expect of advantage from the operation of turning, or indeed from any other operation whatever?

It is obvious, therefore, that in a case of this description, our prognosis should be most unfavourable, and at the same time sufficiently guarded against possibilities which an experienced reader may easily represent to himself; so that it should not fail to shield the professional reputation of a party who might be requested thus late in the progress of the labour to employ or to direct the employment of the ultimate resource of our art. In a case like this, there can be no doubt of the actual death of the child for many previous hours; and it would be cruel to diminish the chance of recovery which may yet remain to the mother, by the performance of so difficult an operation, as that of turning in all probability would prove under such circumstances. For the relief of unhappy cases of this sort, the author has been in the practice of recommending an operation of another kind to be performed UPON THE CHILD, by which the impediment to the completion of the labour, might be conveniently obviated; namely, that of bisection of the dead or fatally impacted fœtus at the neck. Assuming the arm or shoulder to be the presenting part, and that it was already propelled deeply into the pelvis, the reader will find, under our fourth or instrumental class of labours, two varieties of instruments, both of which would seem well calculated to meet this object. See plate XLII., figs. 1, 2, 3.

It may be considered a good general rule, never to proceed to the operation of turning when the death of the child is known to have taken place; without at least well balancing the advantages and disadvantages of that operation against those of decapitation or of any other mode of delivery which might be suggested, for the security of the mother; inasmuch as under the circumstances supposed, the preservation of the mother's life should be deemed the only legitimate object of our treatment. This subject will be further considered, when we come to treat of embryotomy operations.

The difficulties of turning will appear, from what we have already intimated, to depend principally upon the rigidity or violent action of the uterus; but they may also in part be ascribed to inconvenient positions of the child in the womb, and its relations to the pelvis.

When the child is well packed into a rounded form so as have its lower extremities folded in front, and within a very short distance from its upper extremities, it may frequently happen, that the practitioner shall be able to reach ONE FOOT without being obliged to pass his hand high up into the uterus. He should accordingly never lose an opportunity of this kind, as it will enable him to perform the operation much less painfully to his patient, and much more safely as to its conduciveness to the preservation of the child's life.

The author has met with a few examples in the course of many years' practice, of exceedingly elongated uteri, where he found the feet of the child located very high up relatively to the abdomen of the mother. In all these cases he encountered much difficulty in performing the operation of turning. In all cases of great rigidity of parts, whether of the uterus, or of the parietes

of the vagina, the young practitioner cannot be too strongly recommended to use forbearance, and to perform the operation most slowly; injuries when incurred being invariably inflicted by quick movements, or by the application of inordinate force. A prudent practitioner will never fail to consider the superior claim of the mother to be saved. Some further remarks on the subject of turning will unavoidably present themselves during our treatment of diverse cases under our third class or that of complicated labours, for the relief of certain varieties of which this operation is especially adapted.

In connexion with the subject of turning, and indeed as an essential appendage to it, we have here to notice a supposed provision of nature to supersede the necessity of that formidable operation in extreme cases, claimed as an original suggestion or discovery by the late ingenious Dr. Denman. "In presentations of the superior extremities," observes that able author, "when the waters have been long discharged, and the shoulder of the child is jammed at the superior aperture of the pelvis, it was said to be expedient and necessary to pass the finger and thumb in the form of a crutch into the armpit of the child, in order to raise the body towards its head, and towards the fundus of the uterus, till it was sufficiently moved out of our way to allow of the introduction of our hand into the uterus. But in some cases, when we are first called, the shoulder is so far advanced into the pelvis, and the action of the uterus is at the same time so strong, that it is impossible to raise or move the child, which is so forcibly impelled by the pains as to overcome all the power we are able to exert. This impossibility of turning the child, had on the apprehension of writers and practitioners left the woman without any hope of relief; but in a case of this kind which occurred to me about twenty years ago," that was as the author believes about 1785, "I was so fortunate as to observe, although it was not in my power to pass my hand into the uterus to turn the child, that by the mere effect of the action of the uterus, an evolution took place and the child was expelled by the breech. As to the manner in which this evolution takes place, I presume that after the long-continued action of the uterus, the body of the child is brought into such a compacted state as to receive the full force of every returning action. The body in its doubled state being too large to pass through the pelvis, and the uterus pressing upon its inferior extremities, which are the only parts capable of being moved, they are forced gradually lower, making room as they are pressed down for the reception of some other part into the cavity of the uterus which they have evacuated, till the body, turning as it were upon its own axis, the breech of the child is expelled as in original presentation of that part. Nor has there been any thing uncommon in the size or form of pelvis of the women to whom this case has happened, nor have the children been small, or softened by putrefaction, because ONE or more children have in this way been born alive. I believe, on the contrary, that a child of the common size, living, or but lately dead, in such a state as to possess some degree of resilition, is the best calculated for expulsion in this manner. Premature or very small chil-

dren have often been expelled in a doubled state, whatever might be the original presentation, when the pelvis was well formed, or rather more capacious than ordinary; but this is a different case to that we are now describing. Yet the knowledge of this fact, however unquestionably proved, does not free us from the necessity and propriety of turning children presenting with the superior extremities, in every case in which that operation can be performed with safety to the mother, or give us a better chance of saving the child. Under such circumstances, the instructions by former writers and the observations we have before made, must still be considered as proper to guide our conduct." Denman's Introduct. chap. xiv. sect. 8. Simmons' Lond. Medic. Journ. vol. v., and Journ. de Méd. de Paris for April and September 1785.

Dr. Denman's theory of spontaneous evolution was very generally accepted; and it maintained its ascendancy in the profession until it was superseded by a juster view, as the author thinks, of the actual facts which it professes to illustrate, published in a well-written essay by Dr. John Douglas of Dublin in 1811. The author takes this opportunity of expressing his obligation to the ingenious Essayist for kindly sending him a copy of the second edition of his pamphlet published in 1819. The following is a succinct explanation of Dr. Douglas's doctrine as given in his own words: "But in order to render as clear as possible the successive movements in this astonishing effort of nature, I will endeavour to describe, still more precisely, the situation of the fœtus immediately prior to its expulsion; the entire of it somewhat resembles the larger segment of a circle. The head rests on the pubis internally; the clavicle presses against the pubis externally, with the acromion stretching towards the mons veneris; the arm and shoulder are entirely protruded, with one side of the thorax not only appearing at the os externum, but partly without it: the lower part of the same side of the trunk presses on the perineum, with the breech either in the hollow of the sacrum, or at the brim of the pelvis, ready to descend into it; and by a few further uterine efforts the remainder of the trunk with the lower extremities is expelled. To be still more minutely explanatory in this ultimate stage of the process, I have to state that the breech is not expelled exactly sideways, as the upper part of the trunk had previously been: for during the presence of that pain by which the evolution is completed, there is a twist made about the centre of the curve at the lumbar vertebræ, when both buttocks, instead of the side of one of them, are thrown against the perineum, distending it very much; and immediately after, the breech and lower extremities make their exit; the upper and back part of the breech appearing first, as if the back of the child had originally formed the convex and its front the concave side of the curve." Douglas's Explanation of the real process of the spontaneous evolution of the fœtus, p. 29, Edit. 2, Dublin. Dr. D. submits to his reader seven cases which go most directly to prove the truth of his doctrine. Since the original publication of his pamphlet the author has himself met with three cases of this very unusual variety of natural birth. In all of them an arm presented, and protruded with

the flat of the corresponding hand turned up towards the abdomen of the mother. One of them was the first of twins, and the process was beautifully exhibited. It occurred in the practice of Mr. Buschell, of Crawford-street, and another gentleman since deceased. The other two cases took place in the years 1821 and 1830 in the practice of the Royal Maternity Charity; and upon the whole the author has not a shadow of doubt that Dr. Douglas's explanation supplies a strict as well as an ample representation of the facts which actually take place in those very rare and remarkable cases. The same doctrine was adopted, and on the evidence principally of one case in his own practice plausibly illustrated, by the late Dr. Robert Gooch. See "A Contribution towards solving the disputed Question, What is the Nature of the Process called the Spontaneous Evolution of the Fœtus?" Transact. of Coll. of Physicians, Lond. vol. vi. p. 230.

### OF CLASS III., INCLUDING ALL THE VARIETIES OF COMPLICATED LABOURS.

The labours comprehended in this class are usually denominated complex or complicated, from the fact of their being accompanied by unusual or extraordinary circumstances, calculated to compromise their safety, or at least very greatly to increase their danger. The following may be enumerated as the principal varieties of complex labours: namely, 1st, Those of a plurality of children at a birth. 2nd, Labours complicated by prolapsion of the umbilical cord. 3rd, Labours accompanied by dangerous faintings. 4th, Labours accompanied or preceded by epileptic convulsions. 5th, Cases at whatever periods of gestation accompanied by uterine hæmorrhage. 6th, Labours complicated with rupture of the uterus, and injuries of other tissues more immediately interested in severe and artificial births: and lastly, labours complicated with diseased conditions, and malpositions of the uterus and adjoining parts.

Of Twin and other Plural Births.—The human female is ordinarily uniparous. Twin cases are said to occur in the proportion of one in seventy or eighty births. On taking the average returns, however, of eight public registers upon this subject, the author has found the mean proportion to be within a small fraction, as one in ninety.

The infrequency of triplet births makes it difficult to discover their numerical proportion; the best approximation would probably average them as one in about six or seven thousand.

The average of quadruplet births, appears to be beyond the reach of any well-founded process of calculation; while quintuplets and other multiples of the function must be considered as more legitimately belonging to the subject of traditionary romance.

Authors have usually enumerated the following circumstances, as presump-

tive signs of plural gestations: 1. An unusual size of the abdomen. 2. An unequal distention of the abdomen; with two or more distinct fulnesses occupying different parts of it. 3. Perception of an unusual motion, and of motions in two or more distinct places. 4. The perception of the phenomena called quickening at two or more distinct and successive dates of the pregnancy. 5. An unusual slowness of the earlier stages of labour. 6. A presumed second discharge or successive discharges of the liquor amnii, and an unusually large size of the abdomen remaining after the discharge of the liquor amnii. 7. The presentation of supernumerary members, as of two superior or inferior extremities of the same side. 8. It may be doubtful how far we might with propriety add, a distinct fœtal pulsation to be perceived in two different parts of the uterus, upon the application of the stethoscope. The above signs of plural gestations may be admitted as moderately presumptive of the fact, in many cases, and in certain combinations. At the same time, however, it must be acknowledged that they are not absolutely and in all cases to be depended on, as positive evidence: they are all liable to misconstructions, and the fact of a plural gestation cannot be positively ascertained until one child shall have been born.

Of the Obstetric Management of Twin Births.—The mode of management of twin births must essentially depend upon the character of their presentations. All possible varieties of presentation, or rather of relative situations of twin children to each other and to the mother, may be enumerated as follows: viz.

1. Both children presenting by the head, and both heads nearly parallel at the commencement of labour. In the progress of such a labour one child would almost certainly obtain precedence of the other, although cases have occurred of the interception of one by the too rapid advancement of the other.

2. Presentation of one child by the head, and of the other by the feet. Such a complication of the presentations would usually be discovered too late for useful interference. For records of curious cases of this description, see Med. and Phys. Jour. vol. xxv. p. 29, the old Jour. de Méd. de Paris, vol. xxxvi. p. 439, and Transact. of the Royal Med. Chirurg. Soc. of London, vol. xii. p. 366. The proper treatment is, to open the first presenting head, and forthwith to finish its birth, so as to leave ample room for the birth of the other child without mutilation.

3. One child presenting by the head, and the other lying across the brim of the pelvis. The head case, if first presenting, and without interception, must be allowed or made to pass either with or without assistance.

4. Breech and head; sometimes the one, and sometimes the other, foremost. It is scarcely possible that these parts of each child respectively should engage at the same time, in such a manner that they could enter into the cavity of the pelvis together. They will probably both pass without the assistance of art: if

not, the forceps must be made available for the delivery of the one, and the curved finger or blunt hook for the extraction of the other.

5. Both children presenting transversely. The operation of turning must be had recourse to for the eventual delivery of each.

6. One by the shoulder, and the other by the breech. Each must be brought away according to its own indications; turning being required for the shoulder case, and the common treatment of breech presentations for the other.

7. One transversely, and the other by the inferior extremities. If the arm or shoulder be found to have already entered deeply into the pelvis, the hand should be forthwith introduced into the uterus for the purpose of turning; which operation should, however, be performed, if possible, with more than ordinary gentleness.

Of duties applicable to all varieties of Plural Births.—1. It is perhaps our first indispensable duty, after the birth of one child has been completed, to ascertain the presence of a second. This is to be done by application of the hand to the abdomen. In the event of another child remaining in the uterus, the uterine tumour will be found, although considerably reduced, nevertheless still very bulky, occupying a part of the abdomen considerably above the umbilicus, and stretching up so as to reach the scrobiculus cordis. This tumour will, in most cases, be found within a comparatively relaxed abdomen, and its fœtal contents perceptible through the parietes of the womb. These circumstances may serve as a sufficient diagnosis of the nature of the case; although, in a very small proportion of examples, it is liable to failure as an absolute test. In a case which occurred in the practice of Mr. Aikin, of Warrington, afterwards Dr. Aikin, an enlarged ovary was for the moment mistaken for the presence of a second child in the uterus, after one had been already born. Med. Comment. vol. ii. p. 300.

After one child shall have been born, the second ovum may generally be easily found presenting, by what we call the internal examination. This fact being ascertained, it would become the practitioner's duty to apply a broad bandage round the abdomen of the patient, in order to give that support to the uterus during its second efforts which it possessed during, what may be properly enough called, its first labour. This precaution is well calculated to prevent hæmorrhage, as well as to prepare the uterus for renewed exertions. The first child having been removed from its mother by the usual bisection of the umbilical cord, the practitioner has to prepare himself for the management of the second labour. The maternal part of the navel-string of the child already born may be now supposed to present loosely at the vulva. The fact of the existence of a second child having been established, the practitioner will of course apply no traction to the cord of the first, lest he should separate the placenta of the second child. And here is especially exemplified the duty of never applying traction to the umbilical cord, until the nature of the labour in

respect to pluralities shall have been ascertained. Plural births are usually exceedingly tedious in their progress, in proportion to the apparent exertions that are made by the uterus, and to the violence of the accompanying constitutional symptoms. In some cases, bleeding may be necessary to subdue excitement, and in others, where the pains are observed to be more than ordinarily languid, it might be requisite to exhibit a dose or two of ergot of rye. If the subject of the case shall have had children previously, the birth of the first child of a suspected case of twins might often be quickened and completed by having recourse to the forceps; and cases of this kind might be made available by a young practitioner, for accustoming himself to the use of that instrument; which, however, he will of course be careful to use, with proper attention to the precautions to be hereafter detailed, on the subject of instrumental midwifery. It often happens in twin births that a long interval takes place between the birth of the first child, and the commencement of uterine action for the expulsion of the second. As the placenta of the first, or a section of the entire placental mass, must be allowed to remain in the uterus, suspended as to its proper function until the second child shall have been born, it is obvious that this interval must be considered as forming an anxious time both for the practitioner and his patient; and a rule should be found which might guide the profession to the best practice in such cases. After the patient shall have sustained much severity of suffering, and experienced considerable exhaustion from the exertions already undergone, it is reasonable that she should enjoy a respite of an hour or two. Whilst this solace is being indulged in, nature has an opportunity of preparing for the renewal of her efforts; and this indeed is the course of progress frequently observed in twin births. There are however unfortunately exceptions to this rule; and the interval is protracted beyond the limits of positive safety. In such cases, what should be the duty of the practitioner? Should nature be left unaided for an indefinite period; or should art interpose to promote the return of pains with a view to the accomplishment of the second birth? It was, not long ago, the doctrine of an obstetric school in this town, that the practitioner should abstain from all interference; and the author can well recollect when he was frequently consulted by persons who had been pupils of that school, for cases of hæmorrhage, which appeared to him to have arisen as results of this practice of long-delayed interference after the birth of the first child. In one case, especially, he was requested to see a patient on the third day after her delivery of the first of twin children. She was in a dying state from loss of blood. The account made out was, that a consultation had been held late on the day after the birth of the first child. It was determined to surrender the case to nature, and to wait her BEST time, as the rule was emphatically expressed. On the day following, another consultation was held, and the same conclusion come to. On the third day the circumstances already stated occurred, with the addition that the patient died from loss of blood after the spontaneous expulsion of the second child, which was in a highly

putrid state. For thus waiting for the uncertain return of pains there can be no sufficient reason; whilst this dreadful liability to hæmorrhage would appear to suggest a very strong motive for the adoption of the opposite practice. Moreover, there is the additional reason for interference, that the aid required is found most simple, and usually very easily and happily applied. If the second child is found to present its head, all that might be usually required would be to rupture the membranes; which would probably in the course of a short time be followed by the renewal of pains. If not, however, the practitioner would have to pass his hand, and bring down the inferior extremities; which, at all events, he would have to do in a cross presentation of the second child. In the greater number of cases, the anxious suspension of the labour would thus be speedily put an end to. The principal precaution to be adopted in the management of these cases is, to give the uterus sufficient time to accomplish its object, as much as possible by its own unaided efforts, after the turn shall have been effected. In other respects the labour must be conducted according to the indications furnished by its presentation. It should be observed, that one practical point must be specially attended to in the management of the second birth, viz. that the head should be conducted through the pelvis, not only with proper attention to the relations of its dimensions to those of the parietes of the pelvis, but also without any unnecessary loss of time, lest by the delay the umbilical cord should be exposed to fatal pressure. It is for want of due attention to this rule that we observe such an excess of the deaths of the second of twins, in obstetric tables drawn up from the practice of females; who, it is well known, are exclusively employed in the ordinary practice of many public institutions.

The placentæ of twins, if not already spontaneously expelled, are to be withdrawn from the uterus together. The manœuvring of this is upon the whole easy, and consists in applying moderate traction, first to the cord of the child first born, and then to that of the other; due pressure at the same time being applied to the fundus of the uterus. This attempt, however, should not be made prematurely, or before the uterus shall have had full time to have gathered together its parietes into pretty firm contraction, by the action of its natural tonicity. The practitioner should be aware of the liability after twin births to a greater amount of lochial discharge, than is usually encountered after single births; not to add, that he must be prepared, in many cases of this kind, to expect a lochial discharge which shall amount to an actual hæmorrhage. The best protection against a profuse loss of blood in these cases, is to keep up, during the whole progress of what we have called the second labour, a moderately firm pressure upon the abdomen.

Cases of triplets and quadruplets are to be managed on precisely the same principles as those of twins. The subjects of all these births will require more than ordinary professional attention during the subsequent recovery.

### OF LABOURS COMPLICATED WITH PROLAPSION OF THE UMBILICAL CORD BEFORE THE HEAD OR OTHER PRESENTING PART OF THE CHILD.

If we assume the head to be the presenting part, the practitioner has to consider, 1. The situation of the head relatively to the pelvis. 2. The fact of the liquor amnii having or having not escaped. 3. The amount of development and other conditions of the orifice of the uterus. 4. The state of the vagina and os externum. 5. The character, if known, of the patient's former labours, as to the duration of their several stages.

The umbilical cord cannot very well be said to prolapse, until after the rupture of the membranes, although it may often be felt coiled within the more accessible part of the membranes before they are ruptured. In this case, the labour must be presumed to be attended by no violent symptoms, and that its progress, independently of this threatened complication, might be going on prosperously. The moment, however, the rupture takes place, the portion of cord, very distinctly felt to pulsate antecedently to that result, will instantly become prolapsed. On the knowledge of this fact, the practitioner should anxiously wait for an opportunity to introduce his hand, and proceed without loss of time to bring down the feet. During the change of position of the child effected by this operation, it might in the majority of instances be expected, that the portion of cord previously felt presenting might be carried into the interior of the uterus, and therefore far enough out of the reach of danger. So long as the head of the child shall remain above the brim of the pelvis, in cases where the orifice shall be sufficiently dilated to admit of the easy introduction of the hand, that expedient, in cases of actual presentation of portions of the cord, might be safely recommended as preferable to all other modes of relief. Should, however, the head have descended to any considerable depth into the pelvis, it is manifest that the operation of turning cannot be either conveniently or safely performed; and if attended with much difficulty, it is equally obvious that the operation itself might have the effect of compromising the safety of the circulation in the cord; therefore some other method might answer the purpose better. This might perhaps be found in certain manœuvres for pushing the prolapsing coil of cord, and causing it to be retained, above the head, until the latter shall have commenced to make its exit through the os externum. Mauriceau proposed, for the attainment of this object, that the prolapsing cord should be enveloped in a pledget of old linen, and the whole pushed up above the level of the presenting part of the child's head. The objection to this practice has been, that it has seldom sufficed to prevent the cord from again almost immediately prolapsing.

Others have since recommended that the prolapsing cord should be pushed up beyond the head, and a piece of dry compressed sponge introduced, and

carried high up immediately after it; with the intention that the sponge becoming expanded by the absorption of the fluids to which it would thus become accessible, might act as an obstacle to the further prolapsion of the cord. In the application of this expedient, there is an obvious danger lest the compressed sponge might itself be made to produce a fatal pressure upon the cord.

The author, some years ago, proposed to carry up the prolapsed portion of cord, in the case here supposed, beyond the head, by attaching it to a thin flexible spatula, slightly curved, and covered with thin soft leather, so as to adapt it to the curve of the head, at the same time without occasioning any inconvenience to the parts lining the pelvis. By keeping up a steady bearing upon the prolapsed cord by means of this simple instrument, whilst the head might be permitted freely to pass, the circulation would in all probability be secured against fatal pressure. See plate xi. fig. 1.

If we suppose the head to have descended deeply into the pelvis, preceded by a portion of prolapsing cord, and if it be a matter of previous knowledge with us that the latter stages of the patient's former labours had been quickly performed, it should be considered, upon the whole, the best practice not in any way to offer assistance. But if, under similar circumstances, there might be no expectation of the case being speedily consummated without artificial aid, such assistance might be most conveniently extended to it, by means of a modification of the forceps, which the reader may see represented in plate xxxix. The long blade would be to be introduced over the side of the child's head, opposite to that along which the portion of umbilical cord might be found prolapsing, whilst it should be antagonized by the short blade, which an adroit practitioner would find no difficulty in applying in such a way as might prevent any great chance of the umbilical cord being exposed to fatal compression. In this way the birth of the head might be no doubt considerably accelerated, and probably sufficiently accelerated to ensure a living birth.

Should a portion of the cord be found prolapsing, the orifice of the uterus being still in a rigid state, and but moderately developed, the head at the same time presenting, we should have but slender hopes of ensuring a living birth; and still less if we suppose the whole course of the parturient passage to be similarly affected. The best security in such a case would be, to promote the relaxation of all the parts by ample bleeding; and then to quicken the action of the labour by the exhibition of the ergot of rye.

In prolapsion of the umbilical cord under the circumstances of cross presentations, it should be considered the most important rule of practice not to attempt the operation of turning too soon; nor before an ample development of the tissues of the parturient passage shall have taken place. But, under the best circumstances, it must be acknowledged that the operation in question too frequently compromises the circulation in the cord; whilst this result might be expected as still more likely to happen, if we suppose a portion of it to have been previously prolapsing. The duty, and at once the better policy of the

practitioner, under such circumstances, would be to communicate, to the parties most interested in the event, a guarded, if not an unfavourable prognosis.

It is not an uncommon thing to meet with cases of breech-presentations with portions of the umbilical cord variously coiled around the presenting part. All that art can do in such cases is to defend the navel-string against pressure from the parietes of the passage, and, as far as may be practicable and safe, to accelerate the labour. After the expulsion of the breech, it will be often in the power of the practitioner so far to disentangle the cord as greatly to diminish its liability to further pressure.

Of Labours complicated with Dangerous Faintings.—The epithet dangerous is here added to the term expressive of the symptom now to be treated of, to distinguish it from the feelings of oppression and languor frequently complained of during the progress of almost all sorts of labours. It is now intended to designate absolute syncope, consequent upon profuse hæmorrhage and other causes of profound and fatal exhaustion. The nature of the faintings here supposed may perhaps be best communicated to the reader by reference to an example or two of cases of this kind. A poor woman, in the practice of the Maternity Charity, after having been six or eight hours in labour, had occasion to place herself on the chamber utensil in the proper attitude, which was that of sitting, for emptying the bladder. During this effort she fell suddenly upon the bed, and in a moment was a corpse. Previously to this accident she was in good health, and not at all exhausted by the labour; but it was supposed by the people about her, that the waters might have been evacuated during the trifling exertion she had then made. Upon inspection of the body, no circumstance calculated to throw light upon the cause of the death could be discovered. No rupture of vessel nor any fluid effused could be seen in any part of the body. The vessels of the brain were not in a state of engorgement, nor could there be found any departure from natural or healthy organization about the heart or any of the great vessels. The author wishes to notice cases of this description rather as facts which are known not very unfrequently to have taken place in the practice of experienced men, and as apologies which may be made available in the absence of more satisfactory explanations, for the occurrence of similar misfortunes in the practice of others. An unmarried woman of about two-and-thirty years of age was the subject of an exceedingly distorted pelvis. She had been in labour seven or eight days, when the author was requested to visit her. After having explained the nature of the case, and represented to her friends her alarmingly dangerous condition from the state of inflammation of the parts within the pelvis, and from the severe nature of the accompanying constitutional symptoms, he was induced to undertake her delivery. He succeeded pretty speedily and without much difficulty in opening the head, and then gradually, by means of the guarded crotchet, in bringing it down into the cavity of the pelvis. In the course of about two hours

from the commencement of the operation the entire child was withdrawn, and was immediately followed by the placenta. When the delivery was thus completed, the patient appeared for a few minutes to triumph over the severity of her sufferings, and expressed herself with great gratitude and cheerfulness. But presently afterwards, upon somewhat quickly changing her position, and adjusting herself for the repose which she now hoped to enjoy, she was observed to sink suddenly into a fainting state, when in a loud and dismal voice she called out "Give me some air! give me some air!" and immediately expired. On an attempt being made to give her a spoonful of brandy she was ascertained to be perfectly dead. It naturally occurred to the author, that her death might be ascribable to some serious injury which she might have sustained from the force employed in the operation of embryotomy. On examining however the uterus on the subsequent day, there was no evidence found that a single fibre of any of the tissues interested in the instrumental part of the labour had suffered injury. The abdominal surfaces, as also those of the bladder, both inside and out, and extensively those of the intestines, were found suffused with variously coloured proofs of active inflammation; but no blood nor any other fluid was found lodged in any of the cavities of the body. For such as the former of the above cases, the author is not aware that he can recommend any thing in the way of prophylactic treatment, and for such as the latter only an earlier interposition of art. Faintings from loss of blood will be considered at length and with more propriety hereafter.

Of Labours accompanied or immediately preceded by Puerperal Convulsions.—Women are subject to two principal varieties of convulsions; viz., epileptic and hysterical. But those which occur during the puerperal state are of the former variety; or at least exhibit a greater analogy to those of epilepsy than to the ordinary forms of hysterical convulsions. The author cannot recognise the existence of the variety of convulsions which Dr. Dewees has denominated apoplectic, as a distinct form of the disease; as in all cases the apoplectic appearances are to be considered as a part or essential accompaniments of the malady. The convulsions which take place during the whole of the first eight months of pregnancy are derived from an hysteric source. Whereas, those which present themselves during the last month, and more especially during the latter weeks of gestation, are more allied to those of epilepsy, and are technically called puerperal convulsions, because they are precisely of the same character with those which occur during labour and the puerperal state. So like the convulsions of epilepsy are the phenomena of this disorder, that the symptoms would seem to be almost absolutely identified; excepting that, in puerperal convulsions, the author has never been able to trace a recollection of the sensation called aura epileptica. Overfulness of the vessels of the head seems to be the most frequent proximate cause of the complaint; although from the presence of the actions of pregnancy, we may well presume a great predis-

ponency to convulsions to exist during that state. Pregnancy is usually and very justly considered a state of plethora; and it may be readily presumed that the balance of such plethora may determine towards the head; inasmuch as the great vessels of the abdomen must be supposed, during the latter weeks of gestation, to be liable to much impediment to their action from the pressure of the gravid uterus. Some writers have ascribed puerperal convulsions to irritation, which they consider to have a tendency to an excessive accumulation of its quantity during advanced pregnancy; and which therefore, from this morbid increment, they think may be sufficient to account for the production of convulsions. However that may be, there can be no question that the origin of the disease must be traced to the head; which indeed the predisponent condition of the greater number of sufferers from it most satisfactorily exemplifies. Puerperal convulsions occur antecedently to and during the excitement of parturition. If antecedently, we must suppose a greater predisponency to the malady: and in practice we may observe such predisponency to be identified with an oppressed and congested state of the circulation in the head. As a timely cognizance of the symptoms indicating a strong predisposition may lead to the adoption of the most useful and effectual prophylactic treatment, it would seem proper in this place to enumerate them with some degree of minuteness. They are all indicative of an increased determination of blood to the head; and consist of a sense of fulness in the head even to vertigo; of intense pain in a part or of the whole of the head; confusion of the understanding; a sense of ringing and of other noises in the ears; temporary confusion or loss of the power of vision, and temporary abolition of the power of thought, and even of sensation. The above symptoms will sometimes occur independently of every kind of excitement, and for some weeks before the accession of labour. But on the abstraction of a full measure of blood, such for example as may amount to twenty or five-and-twenty ounces, the patient will often experience the amplest relief, and arrive at the full period of her gestation without experiencing any repetition of the same symptoms. The author considers that where the above premonitory symptoms are fairly and fully reported, the disease might probably in ALL cases be anticipated and prevented by an adequate abstraction of blood. In addition to the above symptoms, which are indicative of the immediate approach of puerperal convulsions, may be enumerated several constitutional indications of a tendency to them; such as, a short stature, short neck, thick neck, and large head; as also certain predisposing habits, such as those of drunkenness and of free living; neglect of personal exercise; indulgence in strong tempestuous passions; long vigilance from whatever cause; immoderate pursuit of exciting pleasures, including all departures from a sober and virtuous life.

When the disease occurs during labour, we may presume that a lower amount of predisponency to it may suffice to admit of its invasion; inasmuch, as at that period the occasional causes are more intense. And hence we usually observe that it seldom occurs during labour, until the patient shall have arrived at a state

of considerable feverishness, and most frequently of very great excitement of the heart and arteries. When convulsions of this class occur during labour, the following may be observed as the ordinary predisponent symptoms to the paroxysm: namely, an excited state of the circulation; a gradual accession of cephalic symptoms, such as of those which have been already enumerated; great excitement of the heart and arteries; immense irritation and restlessness; great development of heat, unaccompanied by adequate moisture on the surface of the body; unusual strength and fulness of the pulse; engorgement of the vascular structure of the face, producing much turgescence and flushing; an approach to, or actual delirium; great fulness and wildness of the eyes, often accompanied by an expression of extreme distress, or else of a state approaching to fatuity; perception of scintillations of light, or the fancied presence of diverse other bodies; and, in many cases, a sudden seizure with violent pains in the abdomen, differing in character and accessional to those of labour.

A practitioner who should duly appreciate the above assemblage of symptoms, would be able in the greater number of cases to prevent the establishment of the disease by active treatment. From neglect of such practice, a paroxysm might be expected very speedily to take place; which would be immediately followed or identified with sudden loss of consciousness and convulsions. The latter symptom may sometimes be observed to begin with a slight twitching of the muscles of the mouth, which however should be expected almost instantly to terminate in universal convulsions. On the onset of a fit the patient makes a kind of hisping noise with her mouth, as if to retract her saliva. The eyes at first become motionless and fixed, but in a moment afterwards they are horribly distorted and convulsed, while at the same time the muscles of the limbs, as well indeed as those of the whole body, are thrown into alternate contraction and relaxation. After an uncertain duration of the paroxysm, the convulsions subside; and the patient sinks into a state of quiescence and insensibility. The duration of a paroxysm is uncertain; as in some cases the patient is observed to cease to be agitated by convulsions in the course of a few minutes; whereas she may continue to be the subject of them, as we have often seen in other cases, for half an hour or forty minutes, or even for a much longer duration of time. Authors have spoken of cases where the disease has presented itself very suddenly, and without having been preceded by any premonitory symptoms. In some such cases, the attention of the practitioner and other attendants is represented as having been first roused to the danger by a sudden alteration of the countenance, although the patient might be immediately previously engaged in cheerful conversation, or perhaps been simply adjusting her position, or rising to respond to a call of nature; or else, as in some very few cases, the bed has been found suddenly to creak from the action of the convulsions, without any previous indication. The apparent suddenness here presumed may often, no doubt, be ascribed rather to want of care on the part of the practitioner, and inattention to

symptoms which had actually existed, than to the fact that such symptoms had not occurred. When a paroxysm of puerperal convulsions, whether antecedently to or during a labour, takes place, the friends or other persons in attendance are usually thrown into a state of much confusion and dismay; and they naturally expect that the practitioner should instantly take measures to allay the storm. The first thing to be done is to secure the tongue from being seriously bitten; which is to be effected by thrusting something between the teeth that may suffice to keep the jaws asunder without impeding respiration. All impediments to the free course of the blood in the great vessels of the neck, and also in those of the extremities, should be forthwith removed. But the first and great curative measure to be adopted, and which should be had recourse to as soon as the patient can be placed in a secure position for the operation, SHOULD BE THE FREE ABSTRACTION OF BLOOD. On account of the convulsions by which the great muscles of the neck are agitated, as well indeed as those of the whole body, it might prove difficult to secure the jugular vein, were it to be incised; and therefore, as a general rule in these cases, the blood should be abstracted from the arm.

The quantity likely to suffice for the relief of a case of only threatened convulsions, might amount to between twenty and thirty ounces: but if the convulsions are supposed to have been long established, or to have taken place very suddenly, the practitioner would have to take away perhaps thirty or forty ounces of blood, or EVEN FIFTY, in cases of great intensity of the symptoms. The rule should be that the pulse must be reduced into a state of mellowness and softness before the arm is allowed to be tied up. The violence of the convulsions will at all events be made to subside by this procedure; although in many cases, lighter spasmodic twitchings might exhibit themselves for sometime afterwards. In a few extreme cases, in which the author has from time to time been consulted, he has considered it necessary to order a second bleeding after the lapse of two or three hours subsequently to the former one. But he has never, that he recollects, recommended for the second bleeding the abstraction of more than about fifteen ounces of blood. The treatment by large bleeding in these formidable cases may be generally so much depended upon for the patient's recovery, that very few persons who are made the subjects of it are not ultimately saved by it. In the time of Dr. Hunter, as was reported by that eminent practitioner himself, MS. LECT., the greater number of women who were attacked by puerperal convulsions died: whereas in the practice of the more competent of his successors of the present day, the recoveries are in the proportion, at least, of nine out of ten cases that are made the subjects of treatment. After full bleeding shall have been premised, the patient's hair should be removed by shaving, and her head placed upon a bladder of iced water; the application of which should be renewed from time to time according to the rapidity of the re-accumulation of heat in the head. The parts of the head which might remain inaccess-

ible to cold thus supplied, should have their temperature reduced by evaporating lotions in the usual manner. The state of the uterus should next be made an object of attention. In a case of convulsions occurring before the accession of labour, the orifice of the uterus would probably be found closed; nor would any indication whatever of labour be presented. The patient might recover her consciousness, the gestation might proceed for a week or two longer, and a living child be born after a perfectly natural labour at the termination of the full period of pregnancy. In some cases, should the orifice of the uterus be found in any degree dilated; it would be to be inferred that labour had declared itself, and that it would go on as under ordinary circumstances. In that case it would be best to wait until the pains should become more active. In the progress of such a complication, we can do nothing more in aid of the parturient process than we usually do in our conduct of an ordinary labour. We have however to pay great attention to the state of the head, and not unfrequently to repress the tendency to a renewal of the convulsions by a moderate second bleeding. Should in the mean time the patient possess or recover the power of swallowing, her condition might often be benefited by the exhibition of a full dose of calomel and jalap; but in the absence of the power of deglutition, the rectum might be emptied by an active purgative enema. The state of the bladder should be examined from time to time, and, if necessary, its contents drawn off with the catheter. If we suppose the convulsions to have arisen in consequence of the violent actions of parturition, and upon examination find the orifice of the uterus in a state of extensive dilatation, and the presenting part wedging itself with great difficulty within the cavity of the pelvis, or but imperfectly engaged within its brim; we should have to deliberate, first, as to the expediency of proceeding forthwith to the delivery; and secondly, as to the class of instruments we should have to employ to effect that object. It is obvious, that in cases of retarded labour from want of sufficient capacity of the pelvis complicated with convulsions, that the employment of the forceps might be attended with such aggravation of the symptoms, as to make it the duty of the practitioner, after very cautiously trying what he might be able to do with that instrument, to effect the delivery with the perforator and crotchet. To conciliate him to this painful duty he should duly estimate the fact, that puerperal convulsions are very often followed by the death of the child, independently of any use whatever of any class of instruments.

Some difference of opinion has existed as to the use of opium in puerperal convulsions. As far as the author feels himself warranted by experience in entertaining a positive opinion on this subject, he feels disposed to recommend the exhibition of a full dose of opium AFTER ample bleeding; provided the patient might be in a situation to swallow it. And if not so situated, he would advise the adminstration of an opiate enema of proportional strength, should it not be required as a more imperative duty to exhibit a purgative enema, as has been already adverted to. Stimulating the nostrils with burnt feather; dashing

the face or other parts of the body with cold water; chafing the limbs of the patient by frictions, or restraining their movements with undue force, are items of treatment which should rather be omitted than employed, as being more calculated to produce additional excitement than to mitigate the patient's symptoms.

From what has been already stated the reader may infer that the prognosis in ordinary cases of puerperal convulsions is to be considered as favourable under the circumstances of a judicious treatment. When occurring in the absence of labour, they may be subdued at a more moderate expense of depletion than when produced by the excitements of a severe and tempestuous parturition. If the proper treatment shall have been for many hours neglected, and the case should present the symptoms of an actually collapsing state, the issue should be represented as uncertain, if not absolutely hopeless. Convulsions complicated with profuse hæmorrhage, and a fortiori if the loss of blood shall have been very great, should be considered as harbingers of a rapidly approaching death, the convulsions in that case being a part and parcel of the dying state.

### OF HÆMORRHAGE COMPLICATED WITH UTERINE GESTATION, PARTURITION, AND THE PUERPERAL STATE.

As a matter of convenience, although not adopted as a strictly logical distribution of the subject, we shall here consider hæmorrhage under the heads of: 1. abortion; 2, of premature labour; and 3, of labours complicated with hæmorrhage at advanced periods of gestation.

Abortion is rarely effected without hæmorrhage from the uterus. It has been fancied by authors that certain periods of pregnancy are more liable to abortion than others; and that the several periods of the sixth week and the third and seventh months are especially subject to this liability. Boerhaave asserts that in nine out of ten cases of spontaneous abortions, the misfortune takes place at periods corresponding with the menstruating habits of the patient. The author however, after having paid close attention to cases of this kind, has found it exceedingly difficult to verify with accuracy any of those hypotheses; although sometimes very confidently represented as so many facts.

Abortion or premature labour may not prove an inevitable consequence of uterine hæmorrhage. It is well known on the contrary that a slow or slight appearance of blood may be indicated at an early period of gestation, at a period for example corresponding with the time that menstruation would have occurred, had conception not taken place, without involving the fate of the pregnancy in much danger.

Again, blood may be discharged in a small quantity at the time of quickening, without much danger to the progress of the gestation: and indeed such appearances may occur at any period of gestation in trifling quantities, provided the discharge be not attended with expellent or parturient action of the uterus.

It has been supposed that very trifling discharges of this kind in the earlier

months may have the neighbourhood of the orifice of the uterus for their source; it being presumed that the decidua might not at such periods be perfectly completed in its structure, and sufficiently guarded within the orifice of the uterus. Others have supposed that inconsiderable hæmorrhages may have some straggling vaginal branches of the uterine arteries for their source; these being supposed to acquire an unusual fulness during pregnancy, by reason of their great uterine trunk being more than ordinarily engorged for the purposes of the gestation. Hæmorrhages from the uterus during pregnancy should generally be considered as an effect of detachment of parts of the decidua in the first two months, and of portions of the placenta afterwards. And hence the propriety of extreme caution in forming and communicating our prognosis, after a pregnancy shall have once become complicated with discharges of blood from the uterus.

The loss of a few ounces of blood, which shall have a part of the decidua for its source, will speedily become productive of cessation of vital action in the ovum, and will thus cause the devitalized ovum to become a source of irritation to the uterus. Abortion however, or premature labour, should not be considered as an inevitable consequence of uterine hæmorrhage, it being to be presumed, as already intimated, that an appearance of blood may be presented at an early period of gestation, a period for example which might correspond with the time when menstruation would have occurred had conception not intervened, without involving the fate of the pregnancy in much danger. It is well known that blood may also be discharged in a small quantity at the time of quickening, without necessarily exposing the progress of the gestation to the danger of being even suspended; and finally, it is equally a fact that blood, in similar quantities, may escape from the genitals at any period of gestation, without necessarily involving the fate of the ovum, if such discharges be NOT ATTENDED NOR FOLLOWED by parturient action of the uterus. After all, it must be confessed that discharges of actual blood from the uterus, in any quantity, during pregnancy, should be considered as sufficient to excite more or less alarm.

It has been observed, that some women are much more liable to become the subjects of abortions than others; although we find it very difficult to say what are the precise states of such subjects constituting the predisposition. The following are usually enumerated as the most important predisponent causes. 1. An easily excitable character of the heart and arteries. 2. A plethoric state of the sanguiferous system. 3. Great susceptibility of the nervous system to all sorts of impressions. 4. Certain morbid conditions of the uterus itself variously denominated, weakness, rigidity, excessive tonicity, too much lubricity, etc., of that organ, according to the theories of pathologists at different periods. 5. A febrile condition of the system from the presence of acute or chronic diseases. 6. A reduced competence of the individual for vigorous gestation by reason of advancing age, or in consequence of having already borne many children. 7. Constitutional cachexia, from whatever cause or causes

arising. 8. The habit of miscarrying. This habit, indeed, is one of extraordinary agency. Mr. Young, who first filled the chair of midwifery at the University of Edinburgh, manuscript lectures, states that he once had a patient who miscarried thirteen times in succession, but who went to her full time with her fourteenth child; and Schultze refers to a case in his practice of a woman who miscarried two-and-twenty times, at or about the same period of gestation.

On the other hand, all experienced practitioners of any standing have had opportunities of meeting with cases of extraordinary RETENTIVENESS of the ovum. Women are sometimes known to take the most deleterious drugs with the intention of inducing abortion; but are not able to effect their purpose. The author once knew a lady who was run away with by a spirited horse during the third or fourth month of her pregnancy; and who, after having kept her seat for some time, was thrown upon a heap of large angular stones, which had been deposited in great masses along the side of the road, for the purpose of repairing it. From this fall she sustained several wounds and bruises, was taken up in a state of insensibility, and conveyed home, a distance of more than a mile, before she recovered her consciousness. This lady, although she kept her bed for weeks subsequently to her accident, went to her full period of gestation. Mauriceau mentions the case of a woman who, when at the seventh month of her pregnancy, fell from the window of a third story, in attempting to make her escape from a fire. In this fall she broke a bone of the fore-arm, dislocated her wrist, and bruised her whole body; and yet she was happily delivered of a well-grown living child, at the full period of gestation. Mauriceau, vol. ii. obs. 242, p. 198.

The occasional causes of abortion are very numerous, but may perhaps be comprised within the following list: 1. All circumstances whatsoever calculated to excite the circulation to inordinate action, such as laborious occupations, fatiguing exercises of any kind, long walks, rough riding on horseback or in carriages; and, in short, excessive physical exertions of any kind. 2. All influences productive of diseased actions either of the general or uterine system. 3. Diseased states of contiguous or neighbouring organs, as diarrhœa, tenesmus, dysentery, etc. 4. The action of different classes of medicines, as emetics and drastic purges; as also of certain specifics and emenagogues, as of mercury in full charges, savin, ergot of rye, etc. 5. Paroxysms of violent and sudden passions. 6. Strong physical or moral impressions, as from burnings, scaldings, tooth-drawing, terror, and sudden surprises produced by atmospherical commotions, as from thunder, cannonading, horrible sights, etc. 7. Violent and inconvenient movements of the body, as those of lifting heavy bodies, attempting to reach things too high, or of endeavouring to reach to too great a distance, etc. 8. Immoderate indulgence in venery.

When the predisposition to miscarriage is great, the occasional causes may often be very inconsiderable. Abortion necessarily implies a separation of the ovum; and this may be produced proximately by mechanical interference, as

by the stilette; by the rupture of the vascular tissue of the ovum in consequence of the application of any of the occasional causes just enumerated, and by strong muscular action by whatever causes excited.

A natural effect of uterine contraction, and a necessary consequence of it, is a development of the cervix uteri. This development is a gradual process in healthy gestation, and at the full period; but in abortion, it is often effected suddenly, rapidly, and violently. When the action of gestation ceases, it may at any time be followed, and is usually very soon succeeded, by expellent contraction of the uterus; but when such expellent contraction has been instituted, the author believes that no chance will remain for the permanent retention of the ovum; and that, sooner or later, premature expulsion will inevitably follow. Under these circumstances the practitioner's duty will chiefly consist in guarding against excessive losses of blood, which may at any time occur after even a partial separation of the ovum; and afterwards in carrying the patient safely through the consequences of those exhausting hæmorrhages, which seldom fail to present themselves when the abortion takes place subsequently to the third and fourth months of gestation.

When the action of gestation ceases, it has been already intimated that the death of the fœtus is an inevitable consequence. That result may be expected to be almost immediately followed by a cessation of the ordinary sympathies of gestation, and by the following indications of a devitalized pregnancy, viz. 1. Certain impressions, or a sort of consciousness of a change of circumstances in the condition of the gestation, more distinctly felt by the party herself than easily conveyed by her in words to her medical attendant. 2. Recession of the milk and consequent flaccidity of the breasts. 3. A sense of coldness of the abdomen. 4. A sense of more than ordinary weight of the uterine tumour, accompanied by the feeling of its falling from one side to the other of the abdomen, as the patient may have occasion to change her position, a result called by French writers BALLOTTEMENT of the gravid uterus. 5. Want of motion of the child subsequently to the usual period of quickening. 6. Stillicidium of a watery and ichorous discharge from the uterus.

The cessation of the action of gestation is in many cases followed by expulsion of the ovum in a few hours. In some others however many days, or even a fortnight, are suffered to elapse before uterine contractions supervene and the action of abortion is established; whereas, in some rare cases, the blighted ovum has been known to be retained indefinitely for many weeks or months. During the first few hours of a miscarriage the discharge from the uterus is usually trifling in quantity, like that of an ordinary menstruation; but in proportion as the uterine contractions become more urgent, and the separation of the ovum more extended, the hæmorrhage gradually increases, until the process shall have been consummated.

OF THE TREATMENT.—The indications of treatment are, 1st, if possible to

prevent abortion from taking place if it be only threatened; and 2nd, to conduct the patient safely through it when its occurrence is unavoidable.

In meeting the first indication we necessarily presume upon the LIABILITY of our patient to become the subject of miscarriage, and accordingly have to adapt our measures of prevention to the presumed cause. To qualify ourselves for this duty we have to attend minutely to the history of the patient's former miscarriages; to her peculiar character as to health and constitutional strength; to her condition when she became pregnant; as well as to any changes or accessional susceptibilities to which she may have become subject since the date of that event. In plethoric habits, and in persons subject to copious menstruation, the diet should be much abridged, and in some cases positively restricted to vegetable food. If, together with fulness of habit, the patient shall have brought herself into jeopardy by faults of her own, as very frequently happens in first gestations, from ignorantly indulging in diverse pleasurable excesses, bleeding should be had recourse to as a first measure; and should be repeated once, or more frequently, as the demands of individual cases might indicate. Added to this should be enjoined a more or less absolute REST, until the progress of the gestation shall have become more settled.

All circumstances calculated to raise the temperature of the body should be most cautiously avoided. If compatible with the opportunities and moral circumstances of the patient, ablutions with cold water, and injections of moderate quantities of it into the vagina, repeated three or four times in the course of the twenty-four hours, might be attended with a considerable diminution of the phlogosis of the uterine system. Young and vigorous subjects, if also plethoric, as the greater number of women may be said to be in their earlier pregnancies, and especially the recently married, should be restrained to great moderation in their use of the rights of matrimony, or, if necessary, be made to abstain altogether from its privileges.

For persons addicted to the habit of miscarrying, the use of the cold or tepid bath, affusion of cold water or the shower bath, and the douche, consisting of plentiful affusion of cold water over the loins, have respectively been recommended as a means of improving the general strength and tone of the uterine system, and therefore of diminishing the weakness and of shielding the susceptibilities of delicate subjects, who are presumed to be most predisposed to the action of abortion. If it be determined to have recourse to cold bathing, the capacity for bearing it with impunity should be formed by the previous use, for a few days, of the tepid bath. It is considered an established rule in the management of pregnancy, especially when attended by any indications of fulness of the uterine system, not to recommend the use of the WARM BATH. If great uterine irritation be a prominent symptom, we generally advise venesection, and the use of mild laxatives conjoined with hyoscyamus.

Added to such other measures as might be deemed useful in these cases, rest in a horizontal position should be enjoined as an indispensable part of the

treatment. But in some cases of an obstinately-established habit, we find that all precautions of this kind too often fail of success; and in his anxious endeavours to interrupt the habit, the author thinks he has more frequently succeeded in the attainment of his object by producing specific changes in the constitutional actions of his patients by means of mercury than by any other measures whatsoever. He has also more frequently succeeded in improving the constitutions of delicate and cachectic subjects by the administration of mercury, in the absence of pregnancy, than by any other treatment. He has generally been careful in these cases to limit the action of the remedy to a moderate constitutional influence, kept up however for two or three months; without allowing it to produce the disagreeable and often very painful results incident to a full salivation. The patient in the mean time has been recommended to abstain from the means of impregnation.

Sulphureous vapour baths and chlorine baths might also be properly recommended to meet the same prophylactic indication. This power must likewise be made available for its purpose in the absence of pregnancy. If it should be known, or supposed probable, that the habit of abortion was the result of a venereal taint in the system, experience proves that it must not be expected to be subdued without the use of mercury. The practitioner, however, under such circumstances must be very cautious to exhibit his remedy to the proper party, inasmuch as the husband is much more frequently the primary cause of the repeated miscarriages thus occasioned than the wife herself.

How to check Abortion when threatened.—It has been already more than once intimated that the result of miscarriage cannot be prevented when the action of gestation shall have ceased. But certain indications are sometimes exhibited, which should be considered as so many warnings of danger, and which accordingly might be advantageously subjected to treatment. Amongst these we may mention, 1st, Appearances of blood, such as women call shows, presenting themselves irregularly, accompanied with slight pains of the loins, upper parts of the thighs, and pubes. This symptom should at once be made the subject of proper treatment; for if not, it may very soon be followed by the characteristic expellent pains incident to abortion. The proper remedies will of course be indicated by the state of the general health, supposed condition of the circulation, state of bowels, and other circumstances. In most cases of this description, venesection, rest in the recumbent state, abstemious diet, and abstinence from all means of excitement of the uterine system, will require immediately to be put in force.

A sanguineous appearance after sexual intercourse may be mentioned as another warning symptom. This symptom is an evidence either of great weakness or of great functional excitability of the uterus; and if it occur at an early period of gestation, it occasions uncertainty as to the actual fact of pregnancy.

Some specific irritation, certain impressions which a patient may speak of, affairs of her own experience, without being able to describe them, sometimes

exhibit themselves as indications of threatened abortion. The treatment in such cases will, of course, depend on the character of the symptoms described, on the state of the general health, on the patient's regularity and equableness of temper, on her disposition to conform to the rules and regulations prescribed to her, and on a variety of other circumstances. In such cases the treatment by bleeding will seldom admit of being neglected. Opiate injections into the vagina might be advantageously had recourse to, together with rest in a recumbent state.

Excited states of the circulation often furnish a very useful indication of the liability to abortion. Venesection of course is here also to be considered as a principal remedy. When therefore we encounter the following symptoms in evidence of an excited, or even of a congested state of the circulation, viz., a strong, quick, frequent pulse; palpitation of the heart; a sensation of fulness in the circulation of the head, with frequent throbbing of the temples; these symptoms, in the mean time, being accompanied or alternating with pains in the loins and region of the uterus; bleeding should be at once resorted to as the most powerful prophylactic within our reach. The bowels, if constipated, should be relieved by blue-pill and colocynth, assisted by mild demulcent enemata.

When we cannot prevent abortion, it becomes our remaining great indication to conduct our patient through it with safety. The first object of our attention should be the hæmorrhage, which almost invariably accompanies and succeeds to a detachment, however trifling, of the ovum from the uterine surface. The routine practice adopted, even AFTER the institution of the process of abortion, is to employ venesection. The reader will observe, that bleeding has just been recommended as a most efficient PROPHYLACTIC measure, in cases of threatened abortion. But when that process has once commenced, we have seen that its completion cannot be prevented: and if that doctrine be well founded, it is obvious that the abstraction of blood must be the most improper practice that can be recommended; inasmuch as the loss of blood is the great evil which in the sequel of such a case we should have especially to guard against. Once decide the fact that the abortive process is established, we conclude, with equal decision and confidence, that the treatment by bleeding must be immediately stopped. It being impossible to foresee what quantity of blood shall escape before the miscarriage might be completed, any reduction of the general mass of blood yet remaining in the system, would be so much positive addition to the patient's existing misfortune. Hence the duty of diminishing the accompanying discharge by all the means in our power. For this purpose we exhibit the acid draughts usually administered on such occasions, together with nauseating doses of emetic medicines. The same object is also attained by the application of cloths, dipped in vinegar and water, to the external genitals and the neighbouring surfaces, by the introduction of small pieces of ice or of iced water into the vagina, or by means of dossils of linen, immersed in water acidulated with vinegar or reduced in its temperature by an admixture with common salt. The

effect of applying cold to the genitals and the parts immediately contiguous, can equally effectually be attained by causing the hand and arm to be immersed in cold water or vinegar and water of the same temperature. This latter mode, however, of applying cold, may not, in all cases, be recommended in preference to the common modes; inasmuch as there are patients, and hired attendants, who would not attach equal value to it. Cold air should be admitted, with proper precautions, into the patient's chamber. Opiates may be administered to restrain irritation; which, by the removal of that symptom, may be expected occasionally to have the effect, indirectly, of restraining the hæmorrhage. If opium, however, is known to operate as an anti-cholagogue, which it does in certain cases, small doses of hyoscyamus should be substituted in its stead.

After all, if the abortion proves tedious, and a considerable quantity of blood is lost, whether by a few profuse, or by many-times-repeated smaller hæmorrhages, something more decisive must be adopted than any of the measures just enumerated, viz., a measure which shall have for its objects the induction of expellent action of the uterus and the speedy dislodgement of the ovum. The author has known numerous examples of very profuse hæmorrhages taking place during comparatively early periods of pregnancy, before the institution of the process of expulsion. Should such hæmorrhages be so frequently repeated as to produce much weakness or distressing nervous symptoms, or threaten to lay the foundation of permanent loss of health, it would at once become our indispensable duty to discharge the liquor amnii by stiletting the ovum. The liquor amnii may be discharged comparatively easily, either by perforating the membranes with a stilette, or by a long male catheter considerably uncurved, and with some perseverance introduced into the cervix uteri, so as to reach the membranes, and eventually conducted into the interior of the body of the womb. The discharge of the waters will have the effect of inducing expellent action of the uterus in the course of a few hours, or at most in a day or two. But even this measure may not be always necessary to attain the object of causing the abortion to be completed; inasmuch as the proper use of the plug may frequently suffice to excite the womb to expellent contraction should that object be deemed advisable. But, for the attainment of the special purpose now contemplated, a plug of sufficient bulk must be made use of to charge pretty completely the whole of the hollow of the vagina, so as to irritate, by its strong pressure against the orifice of the womb, the parietes of its body and fundus into powerful contraction. Of the use and mode of introducing the plug to arrest uterine hæmorrhage, the author will have an opportunity of speaking more at length hereafter.

When abortion takes place at early periods of gestation, it frequently happens that the fœtal part of the ovum is expelled, while the placental portion and its appended membranes are retained. This is the more unfortunate, inasmuch as art has little in its power to effect for the relief of such cases. The portions of the ovum so retained are, however, in most cases, ultimately ex-

pelled, either at once and in one mass, or afterwards in successive and smaller pieces, until the whole shall be discharged. If, however, retained by strong adhesions, the remains of the ovum may be found occupying the mouth of the uterus, and presenting, like a polypus, some weeks afterwards, and like a polypus causing much irritation towards the orifice and flooring of the vagina, accompanied in some cases by profuse discharges of blood. These indolent bodies should be removed, if possible, without being broken or ruptured; and it is often practicable to effect their detachment completely, so as not to leave a single fragment behind; a result, when attained, which generally gives great satisfaction to the patient and her friends. The author recollects a case of abortion of which the fœtal part of the ovum was expelled at about the tenth week of gestation. The remainder was permanently retained without, however, producing any future detriment to the patient. It must, on the other hand, be admitted that, putrid and putrifying portions of retained placenta have often been productive of very serious consequences, such as abominably fœtid discharges from the vagina, great hæmorrhages, feverish affections accompanied by a small sharp pulse, profuse perspirations especially at night, much prostration of strength, tenderness and intumescence of the abdomen, entire loss of appetite with corresponding derangement of the chylopoietic and gastric functions, and, finally, by the most alarming nervous and hysterical symptoms. To anticipate, and as much as possible to mitigate these serious inconveniences, the author places much reliance on the practice of frequently injecting warm water into the body of the uterus, for the purpose of removing all the putrid matter that could be forcibly washed out by such means, and of diluting, and of therefore rendering comparatively harmless, whatever of sordes that might not be completely detached and removed by such injections. Each application of the fluid should occupy at least an hour or two, and the water should be as hot as could be well borne. See some excellent cases in illustration of this practice in the old Journal de Médécine de Paris, vol. xii. p. 459, by M. Touzain.

Of Premature Labours complicated with Hæmorrhage.—Labours occurring prematurely, during any of the three last months of gestation, are technically called premature labours; and, if accompanied by hæmorrhagic discharges of blood, are attended with more or less danger both to the mother and child. It is obvious from the advanced period of gestation at which these hæmorrhages are supposed to occur, that on an average they must be attended by more abundant losses of blood than such as occur at earlier periods of pregnancy, by reason of the greater development in the latter months of the vascular tissues both of the uterus and the placenta. As this subject is fraught with the deepest interest, and as it is of the last importance that it should be distinctly understood in all its branches, the author thinks that its distribution into distinct sections, with a view to the separate consideration of each, might be attended with much practical advantage; inasmuch as it would be a means of

ensuring the reader's better comprehension of the entire subject. In the year 1776 the late eminent Dr. Rigby of Norwich supplied ample materials for a new classification of hæmorrhages, which he also forthwith made available for that purpose, in an Essay which he published the same year "on the Uterine Hæmorrhage which precedes the delivery of the Full-grown Fœtus." In point of date, Dr. Rigby was doubtless anticipated in the publication of some of the most important facts, which he propounded in his essay, and on which he founded his great distinction of hæmorrhages into ACCIDENTAL and UNAVOIDABLE; although from the date of many of his cases there can be no doubt that Dr. Rigby was at least equally entitled to the merit of novelty as to their common views with his French rival the celebrated Levret. Dr. Rigby distributed all uterine hæmorrhages of the latter months of gestation under two principal heads, which he accordingly denominated accidental and unavoidable hæmorrhages; considering the latter class as the effect of detachment of a part or whole of the placenta from the neighbourhood of the orifice of the uterus, to which he supposed it had been previously attached; and the former as the results of detachments of the whole or part of that mass from the fundus or body to which he presumed, under those circumstances, it had been previously attached, but subsequently separated, in consequence of the application of diverse occasional causes; from accidental causes, such as from violence or any other causes, whether physical or mental, which might suffice to detach it from the surfaces of the fundus and body of the uterus to which, and not to its orifice and cervix, it is ordinarily attached. The author begs to adopt Dr. Rigby's admirable classification.

We, however, propose to treat first of the variety of hæmorrhage called by Dr. Rigby UNAVOIDABLE. It is well known that a period in the gestation must arrive when the orifice of the womb must become developed, and this happens in all cases at the full period of gestation, and must take place before the ovum can at all engage in the parturient passage. But we have had occasion to state, in a former part of the present work, that a great change also takes place in the form of the NECK of the uterus, during the three latter months of gestation; and that then the cervix, by reason of its gradual development, is insensibly expanded, and therefore in effect added to the general cavity of the body of the uterus, so as totally to have the narrow passage through its neck, which is characteristic of its condition during the earlier months, obliterated. The development of the cervix uteri here referred to, being a natural condition of the womb during the latter months of gestation, it is obvious that the placenta, if it should happen to be attached to those parts, must necessarily suffer rupture, a result which must inevitably expose the subject of such a gestation to sudden and profuse hæmorrhage. This variety of hæmorrhage, it must appear, therefore, has with great propriety been denominated unavoidable, since from the rupture and separation of the placental tissue from its surface of implantation just described, IT COULD NOT HAVE BEEN PREVENTED. The rupture of a part of the placenta, as we have now supposed, being inevitable, the consequent hæmorrhage

must be considered also as necessarily unavoidable. But such detachments may sometimes be limited to very small portions of the placental tissue. In those cases we might expect that the hæmorrhage should be only moderate in its quantity. But the same necessities of such unfortunate gestations continuing to operate, successive detachments may be expected to take place of additional portions of the placenta, so that a recurrence of the hæmorrhages may be expected from time to time to take place in similar or in larger quantities, until at length the life of the patient shall be brought into imminent danger. Before this pathology was discovered and embodied into a practical doctrine, all the subjects, or at least nearly all the subjects, of such pregnancies perished by profuse hæmorrhages which occurred in the latter months; of which the cause was not understood, and which therefore were never made on principle the subjects of the only treatment which could have been effectual. Mauriceau very pathetically laments the premature death of a favourite sister, who died the victim of a hæmorrhage of this kind; although it opened not his eyes to a glimpse of a correct understanding of its cause; which, if he had been aware of it, must have protected the practitioner who had attended on the case from the unfair reflections with which he denounced his practice.

Of the Proper Treatment of Unavoidable Hæmorrhage occurring in the Latter Months of Gestation.—When the true cause of this form of hæmorrhage was ascertained by Messrs. Rigby and Levret, the same practice was suggested to the minds of both, viz., the expediency of effecting the delivery as soon as the operation necessary for its accomplishment could be safely performed.

Dr. Rigby, in his first edition of his work on uterine hæmorrhage, founded upon the distinction of its causes which has been described a most important difference in the treatment of the two forms of floodings which that distinction recognised. In the case of unavoidable hæmorrhage, he at once insisted upon the practice of putting an end to the gestation by the induction of premature labour. This he proposed to do by introducing his hand, of course in many cases more or less forcibly, into the uterus, and bringing down the feet; concluding upon an inevitable return or repetition of the hæmorrhage, if ever he found the placenta presenting at or within a distance he could reach of the orifice of the uterus if this practice was not adopted. As far as the author has been able to comprehend it, the doctrine of Dr. Rigby maintained that this treatment was to be adopted too unconditionally, and without sufficient attention to the precautions necessary to be observed with respect to the state of the orifice of the uterus. He never once notices the fact that the cervix and orifice of the uterus might be found impracticably rigid, even for days, subsequently to losses of fatal quantities of blood. For whilst admitting the fact of the uterus remaining undilated in the midst of profuse hæmorrhage, and the woman "might be dying from great loss of blood," he proceeds rather to assume the dilatableness under such circumstances of the

os uteri by the introduction of the hand, than to suggest any means for the induction of the principle of spontaneous development, or to recommend the use of any efficient power for suspending and arresting the hæmorrhage, until the action of expulsion might be instituted. In short, he appears to lay no adequate stress on the danger of introducing the hand in the absence of a parturient condition of the womb. It is a fact, however, which the reader may fully depend upon, that if the parturient principle is wanting, artificial delivery may at any rate prove a most perilous procedure. The author has met with many examples even of fatal results of profuse uterine hæmorrhage, unaccompanied by any amount of dilatation of the orifice of the womb. In the summer of 1819, Mrs. P. became the subject of a profuse hæmorrhage in the earlier part of the eighth month of her first gestation. She was at the time occupying a temporary residence at Richmond in Surrey. The amount of the hæmorrhage was so great as exceedingly to alarm her, and to induce her forthwith to return to her house in town. Having previously engaged the author to attend her in her expected confinement, she sent for him immediately upon her arrival in London. The orifice of the uterus was found on examination but slightly dilated, and as rigid as if no hæmorrhage had been sustained, although it was described as amounting to nearly A GALLON of blood. This statement, however, it is to be presumed, must have been much exaggerated. The circumstances of the case were such as greatly to have alarmed her husband and the members of her own family, and it was suggested that it might be desirable to obtain a consultation. It was accordingly arranged that a consultation should be held on the evening of the same day. It was attended by the late Drs. Sims, John Powell, and by the present reporter of the case. After each of the party had satisfied himself that he could feel a small portion of the placenta attaching to, and even in the form of a slender stringy substance protruding a little way through the orifice of the uterus, it was resolved to recommend the operation for the induction of premature labour without delay. This resolution was no doubt partly formed on the exaggerated representations given of the amount of the hæmorrhage which had occurred at Richmond. Inasmuch as the author had been pre-engaged to attend the patient in her confinement, the duty of operating of course devolved on him.

The operation was performed in the presence, first of one and then of the other of his friends who had assisted him in the consultation; and he believes with as much slowness and caution as could be well practised. It indeed occupied between four and five hours in the performance; which is itself at least a presumptive evidence that the precautions usually observed in such cases were not neglected. After effecting the dilatation of the orifice of the uterus, the presenting ovum was found unruptured, and the lower extremities of the child, which could be felt through the membranes, were brought down without difficulty. After the removal of this child, which was alive and vigorous, although unusually small for its period of supposed uterine growth, it was soon

discovered that there was another in the uterus. The membranes of the second child presented as in the other case, and the second birth was completed in about a quarter of an hour after the first. The double placenta, for such was the case, was thrown off in the course of about another quarter of an hour, and no hæmorrhage was sustained after its removal. Both children were alive and vigorous. It was not however supposed they could long survive; and they accordingly died in the course of the forenoon of the day following. The mother was considered next day to be doing pretty well, after having enjoyed a TOLERABLY good night: she nevertheless complained of some headache and fever, and had had little or no lochial discharge. The skin was rather harsh and dry; the tongue was white and loaded; and the patient had drunk very freely of diluent fluids. Her pulse was perceptibly excited: but what she most complained of was a painful throbbing, which she referred to the small of the back. There was also some tenderness of the hypogastric region; for the relief of which, a dozen leeches were ordered to be applied to the part affected. A general bleeding was not advised, in consideration of the very great quantity of blood which had been already lost. Mrs. P. was visited daily till the morning of the fifth day after delivery; when all the gentlemen who had previously met in consultation were sent for in great haste on account of an alarming hæmorrhage with which she had been recently visited. To make short of the account, the patient was found moribund upon the arrival of her medical attendants.

The reader may readily conceive the distress of mind which this unfortunate termination of a case so interesting occasioned to the author; since he could hardly conceal from himself the probability that it had arisen from rupture of a part of the orifice of the uterus, in consequence of too much force applied to it, notwithstanding the extreme caution with which the operation of premature delivery had been performed.

Permission having been obtained to inspect the body after death, it was some satisfaction to find that no such rupture as had been apprehended had actually been inflicted. The cause of the hæmorrhage however became sufficiently manifest. The long-continued bearing incident to the introduction of the hand had produced contusion, inflammation, and suppuration of the os uteri; and a portion of its tissue, about the diameter of a sixpence, had sloughed off, and left behind it a deepish ulcer of the same extent. On examining carefully this part, several considerable branches of arteries were found in the depth of it, open to the day: and thus was rendered evident the cause of the fatal hæmorrhage.

Since the date of the above case, the author has never been induced to make the attempt to force his way into the uterus, when its orifice has been in a state of obstinate rigidity, or even in the absence of a considerable amount of development and relaxation.

But suppose the hæmorrhage should return, either once or repeatedly, the

orifice of the uterus continuing in a rigid state, so as to involve the patient's life in great jeopardy; what other measure, or is there any other that can be proposed, by which her life might be placed in a state of security? The treatment in such a case, which the author for many years has recommended and practised with great advantage, is that which was long ago suggested to the profession by M. Puzos under similar circumstances, viz., that of discharging the liquor amnii by rupturing the membranes. It is a fact that the artificial discharge of the liquor amnii may, in a certain proportion of cases, be relied upon as a means of SUSPENDING profuse uterine hæmorrhages; and it will hereafter be made to appear, as it has indeed already been seen, that the discharge of the liquor amnii thus promoted may be depended upon as A MEANS CALCULATED TO INDUCE THE ACTION OF PARTURITION. When that action is instituted, we generally find it accompanied, or at least very speedily succeeded, by a state of comparative relaxation of the orifice of the womb, such as might admit of the introduction of the hand without exposing the tissues to injurious contusion.

But let us next suppose the liquor amnii to be discharged in the manner here described, and the hæmorrhage nevertheless to continue, without any sensible reduction of its amount, the patient in the meantime gradually losing strength, and the pulse getting quick and feeble, and yet the os uteri STILL TO RETAIN OBSTINATELY ITS RIGIDITY: and here we are not supposing a case which experience does not fully warrant. Is there any thing within the reach of art which might prove competent to rescue the subject of such formidable complications from her imminently impending fate? There surely must be; and it will be found to consist in adequately plugging the parturient passage. The circumstances of the case, as we now suppose it reduced to, are, that the patient has already suffered the loss of a great quantity of blood from the uterus; that the liquor amnii has been artificially discharged; but that the orifice of the uterus remains still in a state of obstinate rigidity; the chief inconvenience that could be expected to arise from the use of an efficient plug would be, that it might mask an internal hæmorrhage. But the orifice of the uterus is by supposition yet in a state of rigidity, and the probable inference is, that the whole of its parietes may be in a similar condition, or at all events so far possessed of their natural tonicity as not to admit of unlimited development. If then we suppose the vagina to be properly plugged, there will be left but little room for the reception of blood into the body of the uterus. The author, however, has reason to suspect that the principle on which the use of the plug is founded is but little understood in this country. In his consultation practice he has frequently met with examples of plugging which could have had but very little effect, even in diminishing the quantity of the discharge which was being sustained, and which could have contributed much less towards completely subduing it. The latter object, however, he has the pleasure to state, is CERTAINLY ATTAINABLE. But it is too frequently the practice to adopt the routine

expedient of thrusting a few dossils of linen into the vagina, just as many as might suffice to dilate the lower part of the passage, and to make ampler room for the escape of the current of blood from the uterus. The word plug which is generally made use of to designate the sort of stopper, or mechanical obstructor which we are speaking of, is in itself a very proper term. It means something that is competent to shut up the passage from the womb, as effectually as a cork might be made to plug up the neck of a bottle. But if this plug be too small to meet its proper intention and to answer its purpose as a PLUG in the sense here supposed, it can no more be expected to have the effect of arresting a discharge from the uterus, nor even of greatly diminishing it, than the cork proper for an eight-ounce phial put into the neck of a quart-bottle could be expected to act as a security against the escape of the contents of a vessel of the latter dimensions. Accordingly, the plug to be used for the purpose now under consideration must be sufficiently ample, not only to charge the vagina pretty completely in its ordinary state of capacity, but so effectually to occupy the space within it as to leave no room for the escape of even the smallest stream of blood from the uterus; which, in fact, will amount to a charge that shall be competent to distend it to the utmost limit of its capacity for development; or which, in other words, shall have the effect of filling up more or less perfectly and impactedly the whole cavity of the pelvis. The reader will at once perceive that the idea of a complete mechanical security of this kind is not to be attained by merely introducing a few loose shreds of old linen into the lower part of the vagina, which constitutes too much the routine practice in such cases.

If the material used for this purpose, whether it shall consist of pledgets of old linen, or of quantities of sponge, be divided into sufficiently small pieces, the process of plugging in the manner here recommended may be effected without much difficulty. Of these materials, however, the sponge deserves the preference, as it may be passed up into the vagina so as to form a sufficiently solid body, with much more facility to the practitioner, and with less pain to the patient, than old linen of ever so soft a texture. The sponge has the advantage of being easily introduceable without being charged with any thing oily or greasy, which it is obvious would have the effect of increasing the fœtor incident under such circumstances to the discharges from the uterus. When the plug shall have been passed up according to the directions now given, some provision must be adopted to prevent its premature escape; and to prevent the patient or her attendants from ignorantly and vexatiously removing it, as a means of relief from the pain which it must be expected to produce. This object is to be accomplished by the use of a strong figure-of-eight bandage, passed across the hypogastrium, and doubled round the hips and thighs, so as to apply strongly to the os externum, with or without the aid of an additional compress affixed especially to that part. The patient under this treatment is apt to consider herself rather harshly used, however gently the

duty may be performed. It must be acknowledged that the wearing of such a plug, if we may use the expression, must be attended with considerable inconvenience; which, indeed, may be said to amount in some cases to much actual suffering. It should, however, be presumed that its duration cannot be of long continuance, and that the object to be attained by it must more than outweigh all the uncomfortableness and pain which it might occasion.

This tampon is not here recommended, as it has been by Leroux, as being a mere plug having simply for its object to rescue the patient from profuse uterine hæmorrhage; but also as a powerful means of exciting the uterus to contraction by its mechanical irritation of the vagina and os uteri. It is specially adapted for cases of tedious abortion, complicated with debilitating and frequently repeated hæmorrhages; and for the cases now under consideration, viz., those of profuse hæmorrhages occurring during the latter months, in the absence of uterine action, AND IN STATES OF THE ORIFICE AND CERVIX OF THE WOMB NOT ADMITTING OF AN ADEQUATELY early introduction of the hand for the purpose of turning.

It is well known that no foreign power has the effect of promoting the dilation of the uterus so effectually, and yet so kindly and safely, as the action of parturition. The plug is here therefore recommended as an auxiliary means of inducing that action, and as one admitting of being most conveniently superadded to the measure already premised of discharging the liquor amnii. Both measures have a direct tendency to moderate, and, for a time, almost absolutely to arrest alarming hæmorrhage.

But it may be objected to the use of the tampon used as here recommended, that the mechanical effect more immediately intended to be produced by it must obviously be accompanied by another result of a directly opposite tendency; viz., that of becoming itself an obstacle to the descent of the head into the pelvis, and even possibly after the parturient action of the uterus shall have been long established. This objection is altogether founded upon an insufficient understanding of the twofold intention of the plug, as now proposed; viz. that of suspending the hæmorrhage until the uterus shall have been excited into parturient action; and that of promoting a sufficient dilation of its orifice to admit of the introduction of the hand for the purpose of turning. When these objects shall have been attained, of which the practitioner must be able to judge from the general character and regularly measured consecution of the pains, the plug should of course be withdrawn. Should it require to remain many hours in the vagina, the practitioner will have from time to time to direct his attention to the state of the bladder, and, if necessary, to make use of the catheter.

Should the uterus remain inactive for any considerable time, subsequently to the adoption of the two great measures now detailed, it might become necessary to withdraw the plug first used, on account of its liability to become offensive, and to introduce another as a substitute for it: and this may be done repeatedly for days until the required effect should be produced. The author, however, does

not recollect a single example of a combined procedure of this kind being made use of, which had not the effect of exciting the uterus to parturient action within twelve hours after the introduction of the plug. But the plug must remain in the vagina, not only during the whole time the uterus might continue to be inactive, but likewise for a time which might be deemed sufficient to give adequate effect to the action of labour as a means of producing development of the neck and orifice of the womb. In cases of profuse hæmorrhage occurring at any period short of the completion of the sixth month of gestation, there are no other means on which we can safely rely for the preservation of the patient's life than one or both of the important expedients now sufficiently detailed to the reader.

The orifice of the uterus having at length been ascertained to be sufficiently dilated and relaxed, the hand is to be passed into the vagina, and afterwards, with as little loss of time as possible, into the uterus itself. But upon reaching the orifice of the womb, it will, of course, have to encounter the placenta or some portion of it partially detached ; the remainder, however, still adhering to some part of the parietes. If occupying one side of the cervix exclusively, the hand might encounter only a thin expansion of membrane on the other side ; and there no doubt, and not where the placenta might be found still adherent, it would be proper to effect its gradual and eventually its entire introduction into the uterine cavity.

But in cases where the placenta has been found to stretch across the whole of the cervix, and adhering as might be supposed almost equally to the whole of its circumference, it has been made a disputed question whether the hand should be passed at once and unceremoniously THROUGH ITS CENTRE, or insinuated carefully on one side, where an existing detachment might be found to have already made some way for it, and where the intercepting portion might be felt to be thinnest and almost approaching to the slenderness of membrane. If it were an object to inflict an additional injury on the placental structure, and so to complete the destruction of the fœtal part of the ovum, the practitioner would of course choose to pass his hand through the thickest of the obstructing mass, and run all risks of separating, if so it happen, what might still remain of it adherent by its surface of implantation, from the orifice or neck of the womb. But if he considered that the child in utero might still be living, but living on an already reduced allowance, he would cautiously feel, and perchance he might find it, for something like a right road, where he very probably, and the author speaks from much experience on this subject, might be able to effect the introduction of his hand without further disturbing the connexion yet subsisting between the mother and child, and certainly without incurring any additional difficulty to himself. If the placenta be found to have been exclusively attached to one side of the cervix, it would be the practitioner's duty still more obviously to pass up his hand on the other, and even to select that hand which he might find best adapted for performing the duty.

Some cases are recorded of so much firmness of adhesion of the placental

mass to the parietes of the cervix uteri, that the advocates of the practice of passing the hand through the centre of the obstructing body have sometimes failed to effect their intention.

"In introducing the hand," observes Dr. Rigby, "for the purpose of turning, when the os uteri has been carefully dilated, if the separated part of the placenta be immediately presenting, it is best to endeavour to pass the finger through the substance of it, and, by degrees, with the other fingers to enlarge the opening till the hand can get through it into the cavity of the uterus. The obvious reason for this is, THAT BY THIS MEANS not more of the placenta may be separated than is necessary for the introduction of the hand, and consequently that as little increase of bleeding as possible may be produced by the operation; but if it be impracticable, as I have more than once found it, and it must ever be so when the middle of the placenta presents to the hand, from the thickness of it near the funis, it must be carefully separated from the uterus on one side, and the hand passed till it gets to the membranes, which being easily broken, it is admitted into the bag, the floating fœtus is turned, and the delivery finished as in preternatural positions of the child; except that in this case the extraction should be more slow, that the uterus may not be unable to contract by being too suddenly emptied; a moderate pressure from the hand of an assistant upon the abdomen, as the child is coming away, will likewise be of use to assist the contraction. The placenta being at the os uteri, and being usually more safely separated by the introduction of the hand, comes away immediately; but if a part of it should remain adhering, and the discharge continue, it should be carefully removed, and as it is so near, it may very easily be done." Rigby's Essay on Uterine Hæmorrhage, Edit. vi. p. 60.

In the above passage it is expressly intimated that the hand is introduced through the entire substance of the presenting placenta, in order that not more of it than necessary should be separated, so that as little increase of bleeding as possible might be produced by the operation. But is it likely that the force represented by Dr. Rigby to be necessary in some cases to effect the introduction of the hand could be made use of without inflicting two varieties of structural mischief, viz. 1st, the laceration of the thicker part of the placenta, where its vascular tissue must be supposed to be most developed, and most directly communicating with the circulation of blood in the body of the fœtus; and 2ndly, the risk at least of a more extensive separation than what had already taken place from the cervix uteri? On the other hand, the author begs to state, from his own experience, that by the method recommended by him, it seldom happens that any increase of the previous hæmorrhage is incurred, and that a very considerable proportion of the children of such births are brought into the world alive.

The principal facts proper to be attended to in the treatment of the variety of flooding now under consideration may be briefly recapitulated as follows:— If the hæmorrhage presents itself after the completion of the sixth month of

gestation, before which period it is considered impracticable to turn, the first duty of the practitioner should be to qualify himself for deciding on the fact of the distinction propounded by Dr. Rigby; or, in other words, to ascertain whether the placenta was actually presenting at the orifice of the uterus or not. This point can only be determined by examination per vaginam. But in order that the actual state of things may be fully discovered and established, the examination in question must be such as to enable the practitioner to ascertain BEYOND A DOUBT the character, whatever it may be, of the presenting part of the ovum. The less experienced reader should be here informed that it might not be enough not to be able to find the placenta stretching bodily across the cervix uteri, and that it might be required he should be competent to recognise the presence there of even a small fragment of placental tissue, either prolapsing in the form of a slender shreddy caruncle from the os uteri, or even yet adhering to the cervix within reach of the examining finger. To ensure a perfect accuracy and sufficiency of examination for this purpose, it will be required, in a small proportion of cases, to introduce the finger into the cervix uteri to some distance, so that by scooping its farthest limits, it might report the most entire freedom of the uterine surfaces immediately above, from connexion either present or past with any part of the placenta, should none be thus encountered. The author has met with some lamentable examples of failure in the performance of this duty to the full extent of accuracy and efficiency now recommended. It may be useful to present the reader with the following brief narrative in illustration.

An old gentleman, who had practised midwifery extensively for at least forty years, was requested to visit a young Irish woman of one-and-twenty, in the last month of her pregnancy. She had been admitted a patient of an obstetric institution to which the gentleman in question was attached as one of its officers. The assistance of this practitioner was requested by one of the midwives of the same charity on a Thursday. The case was one of hæmorrhage from the uterus which had taken place an hour or two before, in a quantity as was reported sufficient to produce fainting. A prescription was written for a mixture of sulphuric acid and infusion of roses. No examination per vaginam was instituted during the visit. On the following Saturday the same gentleman was sent for again, in consequence of the patient having sustained a repetition of the hæmorrhage. The same prescription was repeated, with the addition of a solution of alum for an injection into the vagina. On the Sunday the doctor was sent for a third time, and was alarmed by finding his patient reduced by a hæmorrhage, which she was then experiencing, to a state of great exhaustion. He immediately dispatched the midwife to request the author's assistance, who, on his road to the poor woman's residence, was informed by the midwife that the hæmorrhage had been so profuse as already to have been attended with severe convulsions. This representation went far to decide his opinion as to the probable issue of the case. On making examination per vaginam he found the head

presenting, the neck and orifice of the uterus considerably dilated, but without being accompanied by any detachment of the placenta so far as had been previously ascertained by the medical officer of the institution.

This imperfect account of the history of the case did not however fully meet the judgment which he himself had formed of the probable source of the hæmorrhage: and on determining to push his examination sufficiently far to enable him to form a perfectly accurate opinion, he found prolapsing along the side of the neck of the uterus a piece of placental tissue, about as long and in every respect as large as his index finger. It was determined to deliver the patient, as a merely possible means of preserving the child's life, for the mother was already in a moribund state, and rapidly sinking. The child was delivered by the feet, very slowly and carefully, but with considerable facility, and without being either accompanied or followed by any farther discharge of blood from the uterus. It presented, however, no signs of life; and thus were victimised both lives by the non-performance of an adequate examination to ascertain the essential facts of the case, and by the consequent delay of the operation of turning beyond the time when, if performed, it might have ensured the preservation probably of both lives, and certainly that of the more valuable one of the mother.

2. On finding the orifice of the uterus insufficiently dilated, or not at all dilated, and likewise in a very rigid state, although the patient might be known to have sustained a profuse discharge of blood, the next indispensable duty of the practitioner is to discharge the liquor amnii, by piercing the membranes. This may be done either by a stilette, such as is represented in plate xxxv. fig. 2, or by a male catheter, partially uncurved and of sufficient length to reach easily the orifice of the uterus. The author recommends the latter instrument in preference to the other, in consequence of its being a tube of sufficient diameter to admit pretty speedily of the escape of the fluid to be discharged; it being an object in cases of this description to effect the induction of labour AS SPEEDILY as possible.

3. Our next object should be to secure the patient against the continuance or recurrence of the hæmorrhage, until the orifice of the uterus shall have acquired a sufficient amount of development and relaxation to admit of the introduction of the hand for the purpose of turning. This object is unquestionably to be attained by a proper employment of the plug.

4. When, by the actions of the patient, and especially by the periodical occurrence of the pains which the above measures will have induced, and as soon as the practitioner can positively conclude that the labour pains so induced shall have been adequately vigorous, and of sufficient duration to produce the effect sought; it will be his next obvious duty to proceed to and accomplish the delivery by bringing down the feet, and turning.

5. The last important duty will be to effect a safe and speedy removal of the placenta, which happily, under the circumstances now presumed, will seldom

be attended with any great difficulty. The treatment to be adopted after the removal of the placenta, will be submitted to the reader's consideration more properly hereafter.

Of accidental Hæmorrhage occurring in the latter months of Gestation.—In the treatment of this form of hæmorrhage we presume upon the absence of the placenta from the orifice of the uterus or its immediate neighbourhood; although the reader will of course infer, from the simple fact of a hæmorrhage from the uterus, at an advanced period of gestation, that the placenta, wherever previously attached, must have become partially separated. If, however, we suppose it to have been attached, and even partially to remain attached to any largely-expanded portion of the uterus, such as to any part of its fundus or body; such a case would admit of the inference that there might be nothing in the constitution of the pregnancy which must necessarily and unavoidably expose the patient to a recurrence of the hæmorrhage; although it must be confessed that there could be no positive security against a return of the discharge at any future stage of the pregnancy.

Under these circumstances Dr. Rigby has recommended the practice of almost total abstinence from manual interference, and all but an absolute reliance on the sufficiency of nature to effect the delivery compatibly with the eventual well-doing of the patient. But let the fact be stated in his own words: "That this attachment of the placenta to the os uteri," observes that estimable writer, "is much oftener a cause of floodings than authors and practitioners are aware of, I am from experience fully satisfied; and so far am I convinced of its frequent occurrence, that I am ready to believe that most, if not all, of those cases which require turning the child, are produced by this unfortunate original situation of it; and moreover, when the placenta is not so situated, the events of the annexed cases authorize me to say, that if the patient be properly managed, nature will for the most part terminate the labour safely without any manual assistance of the surgeon." The distinction between these two forms of hæmorrhage is to be ascertained positively by examination per vaginam alone; but that mode of discovering the fact is not always satisfactorily practicable at the commencement of a hæmorrhage from the uterus, whilst even at that early period it might often be very desirable to be able to form a probable prognosis. Accidental hæmorrhage, as the expression implies, is the result in the greater number of cases of some known accident, or occasional cause; such as any quick, sudden, or inconvenient movement of the body; any blow, violent pressure, or any other mechanical shock applied to any part of it from without; any inordinate excitement of the heart's action, occasioned by violent and long-continued corporeal exertions; or any undue emotions and excited states of the stronger passions of the mind, which may be presumed to influence the system of the circulation in the gravid uterus, both directly by excessive action of the uterine arteries, and indirectly from the morbid movements of the nervous system.

But cases of what Dr. Rigby has technically called accidental hæmorrhage have often occurred, although certainly not so frequently as some writers have pretended, independently of any of the causes above enumerated.

When a woman at an advanced period of her gestation becomes the subject of a profuse hæmorrhage in consequence of exposure to the influence of any of the above causes, we should be justified, at least in the first instance, in taking for granted, that it would prove a case of accidental hæmorrhage, and that the placenta would eventually be found to have been attached to the fundus or body of the uterus. Inasmuch as unavoidable hæmorrhages occur most frequently in the latter part of the eighth and during the whole of the ninth month of gestation, floodings at other periods of pregnancy might, perhaps, with more than equal probability be imputed to other causes, than to the detachment of the placenta from an inferior portion of the uterus; whilst however floodings during any period of gestation included within the three latter months, might in fact be the result of detachment of the placenta from the neck or orifice of the womb.

Again, the losses of blood consequent upon the application of violent causes are ordinarily very profuse at the onset, and often cease or become suspended soon after; whereas the unavoidable form of hæmorrhage continues for a length of time, or even increases progressively in its quantities, until the power of the circulation shall have been greatly subdued.

But the circumstance which of all others most advantageously distinguishes accidental hæmorrhage from the other form of flooding, is the absence of positive certainty of its recurrence. Hæmorrhages of trifling amount may take place from superior portions of the uterus, as an effect of the application of comparatively trifling causes, and of causes which might not again chance ever to be repeated, and of which the damage, in respect to structure or otherwise, might possibly be easily repaired. Hence it might be reasonably expected that a large proportion of cases of this class of hæmorrhages might admit of a favourable prognosis, at least in respect to the security of the more important life of the mother; and hence no doubt one reason why, after hæmorrhages of this kind, a large proportion of patients never experience a repetition of them.

Finally, accidental hæmorrhages, it may be safely asserted, are on an average less dangerous and less frequently fatal, than those distinguished by Dr. Rigby by the epithet unavoidable.

From the results given of the numerous cases recorded by that gentleman in his essay on uterine hæmorrhage, the reader might be inadvertently led to the conclusion, that accidental flooding might not necessarily involve any danger whatever to the mother's life. He enumerates the events of one hundred and six cases, including both forms of floodings. Of these, forty-two were produced by attachment of the placenta to, and subsequent separation of it from the os uteri; whilst sixty-four resulted from a separation of it from a superior part of the uterus, consequent on the application of various accidental causes. Of the

latter number many were very alarming cases; and although the patients lost large quantities of blood, and were very faint, and experienced other apparently exceedingly dangerous symptoms, not one proved fatal, and all without exception terminated safely in respect to the mother, by simply waiting for the efforts of nature to expel the contents of the womb. This view of the subject produced a strong impression on the minds of medical men of Dr. Rigby's period, and had the effect of inducing them very generally to trust to the natural powers in all cases where they could not satisfy themselves that the placenta was become detached from the cervix or orifice of the uterus. From this very general impression on the minds of the profession however, there was speedily afterwards an almost universal reaction, in consequence of numerous deaths which occurred within the experience of many eminent practitioners of midwifery, both in the metropolis, and in different parts of the country, under precisely the same circumstances with those of the cases enumerated by Dr. Rigby in the work referred to. Within the last two years, Dr. Ramsbotham published his cases of uterine hæmorrhage, the results of which might be represented as being somewhat more accordant with the experience of practitioners in general, than those previously published by Dr. Rigby. Of these, sixteen were cases of accidental hæmorrhage, and nineteen were examples of placental presentation. Of the sixteen cases of accidental hæmorrhage, seven proved fatal to the mother; a proportion of nearly one-half of the whole number: whereas of the nineteen cases of hæmorrhage from placental presentation, eight terminated fatally. The only prominent difference in the circumstances of the cases of both classes under the management of Drs. Rigby and Ramsbotham, to which we can impute any obvious cause of the difference of result, were their residences respectively, being in the one case at Norwich and its neighbouring villages, and in the other in the lowest purlieus of the eastern quarters of London; since in both cases the majority of the patients were persons in the middling and lower orders of society. On a careful perusal of Dr. Ramsbotham's histories, and an analytical comparison of them with those of Dr. Rigby, the author can trace no such striking difference in the practice of one of the above gentlemen from that of the other as can sufficiently account for the difference of results. The almost only difference which can be pointed out in the practice of Dr. Rigby from that of Dr. Ramsbotham, is the treatment by mechanical stimulation of the orifice of the uterus, which the former almost uniformly recommends, but which the latter has not especially urged in any case: whilst again the principal difference of practice on the part of Dr. Ramsbotham from that of Dr. Rigby, is that of having had recourse to delivery in a considerable proportion of cases of accidental hæmorrhage, the parallel cases of which, Dr. Rigby, with the exception of the stimulation just adverted to, entrusted to the unassisted powers of nature; it being the burden of his report, that in all his cases of accidental hæmorrhage not one proved fatal, in consequence of his simply "waiting for the efforts of nature to expel the contents of the womb." On the whole the

author is of opinion, that the total of recoveries in the cases of accidental hæmorrhages reported by Dr. Rigby, and those of fatal events recorded by Dr. Ramsbotham, as having occurred in their practice severally, are equally an excess above the actual average of those events in the general experience of the profession. The real secret however of much of the want of correspondence in the above reports is probably, that Dr. Rigby favoured the public with all the cases of hæmorrhage that occurred to him within the extreme dates of his histories; whereas Dr. Ramsbotham appears to have selected for the perusal of his readers, only the most important and alarming cases that came within the scope of his more extensive practice during the same portion of time. When we consider that the latter gentleman was physician to the Maternity Charity during the whole of the time included within his extreme dates, it is most certain that he has reported but a very small proportion of the total of the cases for the relief of which he must have been consulted during that period.

But to proceed more regularly to the consideration of the treatment of accidental hæmorrhage: It has been already stated, that this form of flooding may occur at any period of gestation; and this fact is obvious from the circumstance that the placenta, although attached to a superior portion of the uterus, might at any time become detached by force or violence, or become separated in consequence of an insecure original connexion by reason of a diseased state of the part. It is a matter of experience that accidental detatchments are often of very limited extent, and that the hæmorrhages thence arising are on that account but of trifling importance. We may therefore safely concur with the opinion of Dr. Rigby, that a very large majority of cases of accidental hæmorrhage, may very safely be entrusted to the efforts of nature to expel the contents of the uterus. If, on the other hand, it could be rationally presumed, that the placenta in any case had sustained an extensive detachment, the author considers that the only safe practice, with a view to the preservation of the more important life of the mother, would be to deliver by art as soon as a good opportunity could be made available for the accomplishment of that duty. But how are we to arrive at a probably correct knowledge of the fact that an extensive portion of the placenta such as we now suppose has become separated, so as to authorize and to require our interposition in the manner suggested? Something like a principle should be found for our decision in cases of so much alarming importance. The author has for many years been influenced in his choice of the practice which he pursues under these circumstances by the consideration of the amount and effects of the FIRST HÆMORRHAGE upon the constitution. When the discharge has been rapid and sudden, as well as profuse, in the first instance, he has concluded, as he thinks reasonably, that it must have had an extensive separation of the uterus from the placenta for its source. It is obvious that the same extent of now become unprotected uterine surface might furnish a source, at any future period of the pregnancy, of a hæmorrhage at least of equal magnitude, which the patient might not certainly survive. This fact then fur-

nishes a principle, which perhaps in most cases should be allowed to direct our practice. The same source continuing to be exposed, it should be a matter of anxious inquiry, how far it were probable that a patient already enfeebled by a first flooding might be able to bear with impunity and certainly survive a hæmorrhage of the same amount again. If it should be his conclusion, that another profuse discharge might prove fatal, or even highly dangerous to the life of the subject, the author considers that it would be his bounden duty to proceed without loss of time to rescue her life from exposure to circumstances of so much danger. The time, however, when he should proceed to effect the delivery by art should be made a point of most deliberate consideration. The orifice of the uterus might be found in a state of extreme rigidity after the lapse of many hours, or even of days, subsequently to a profuse hæmorrhage. In that case it certainly might not be convenient, or even safe, at once and without preparation, to attempt artificial delivery. Under the circumstances here supposed, namely, those of a woman having sustained a profuse hæmorrhage and such as might have been deemed imminently dangerous, and the orifice of the uterus still continuing rigidly closed, the author maintains that the patient should not be left exposed to a repetition of such a flooding, and that it would be the practitioner's duty without delay to rupture the membranes, with a view to the gradual induction of the action of labour.

Experience has very sufficiently established the fact, that puncturing the membranes is calculated rather to suppress hæmorrhage, than to lay the foundation of a return of it; whilst we have already seen that puncturing the membranes rarely fails in the course of a very short time to bring on pains, and to establish the action of parturition. But the action of labour speedily induces a state of relaxation and development of the orifice of the uterus, which may generally be expected to make it both practicable and safe to effect the delivery by art. When a patient shall have already sustained so profuse a hæmorrhage as to have overwhelmed her constitutional powers, and placed her in a state of so much prostration as may give little or no promise of recovery, all nearly that the practitioner should offer to do in the way of assistance, at least in the first instance, would be to rupture the membranes with a view to an early discharge of the liquor amnii. Although in such a case the orifice of the uterus might be in some degree dilated, or easily dilatable, it would be better in the absence of hæmorrhage to delay for some hours the operation of artificial delivery, and employ the time in endeavouring, by every effort in our power, by the administration of both medicines and of nutriment, to sustain and if possible in some degree to recruit, the patient's enfeebled powers. This rule of practice, however, can only be supposed to apply to a case in which the hæmorrhage shall have perfectly ceased ; a return of the flooding being to be considered as an indication for proceeding without further loss of time to effect the delivery, by passing up the hand into the uterus, and bringing down the feet.

In states of extreme prostration, consequent on profuse losses of blood, it has

been recommended by many writers to exhibit what they have called stimulants, usually meaning wine and spirits. The author considers this as very questionable practice, excepting in very rare cases, and then in the smallest quantities. He believes on the other hand, that draughts of cold water are the best cordials that can generally be safely exhibited in cases of flooding; inasmuch as they are better calculated than any other, both to promote uterine contraction, and to ensure a speedy recovery from a fainting state.

Perhaps the first thing that we should think of, after a woman shall have sustained a profuse discharge of blood under the circumstances we are now speaking of, should be to apply a large and firm compress to the abdomen; which should be bound over the anterior parietes of the uterus, moderately tightly, by a broad bandage, coiled repeatedly round the waist of the subject. The objects of this compress and bandage are obviously to give support to the abdominal parietes, to prevent any further diminution of the tonicity of the uterine fibres, and to cause the child and placenta to be applied so firmly to the interior parietes of the womb, as to make it probable that they might be made to operate as a compress to the bleeding surfaces of that organ. Our next measure, if not adopted in the first instance, should be to rupture the membranes. In the presence of a tense state of the ovum, rupture may frequently be effected by a strong pressure of the finger against the presenting part; but if the membranes are felt to be in a relaxed state, or the orifice of the uterus not to be sufficiently developed to admit of the introduction of the finger, a puncture is to be made by means of a more suitable instrument, such as a long probe, a stilet, of which a representation is given in plate xxxv. fig. 2, a stocking needle, or even by a skewer or any other bluntly-pointed instrument that might be found on the premises.

After the operation of puncture shall have been performed, it should be ascertained whether or not the abdominal compress might not admit of being made tighter than on its first application. When the membranes are to be ruptured for the purpose of inducing the action of labour, the operation should be performed so as to secure the discharge of a considerable quantity of the liquor amnii, without loss of time. For this purpose the author has often availed himself of the use of a male catheter, much less curved however than when required to be used for the male subject.

During this part of our discussion, it should not be forgotten that the most practical point relatively to the use of the puncture in uterine hæmorrhages of the form now under discussion, is the selection of the proper time as well as of proper cases for its employment. In early gestation, it can never be useful as a measure of relief for a FIRST attack of hæmorrhage; since it cannot then be an object with the practitioner to induce labour prematurely. When however during the earlier months alarming hæmorrhages shall have occurred several times repeatedly, and after such hæmorrhages shall have importantly compromised the strength of the subject, the treatment by puncture of the ovum

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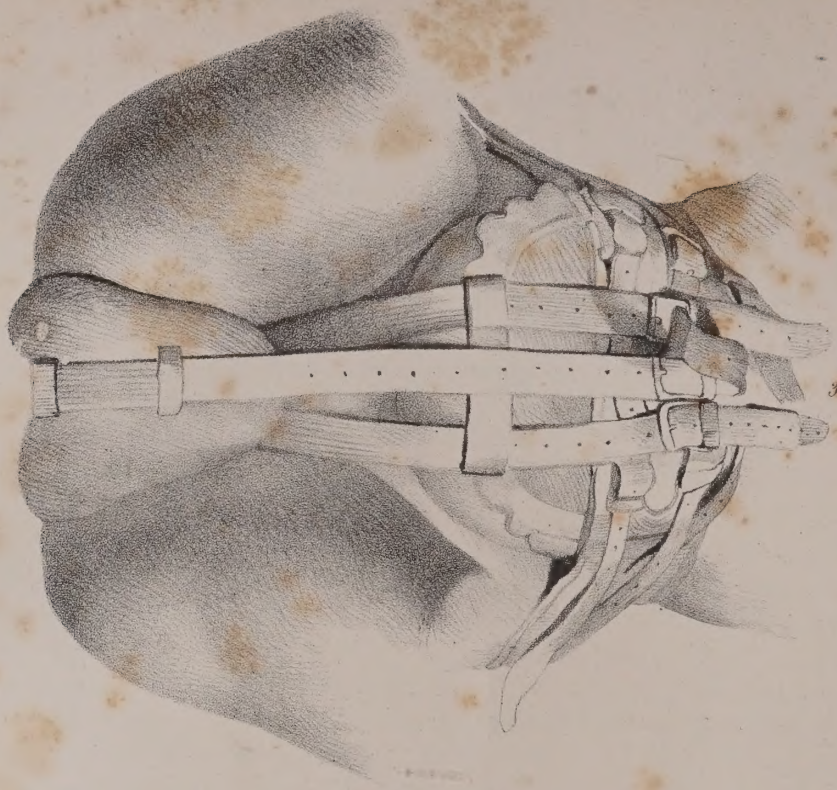

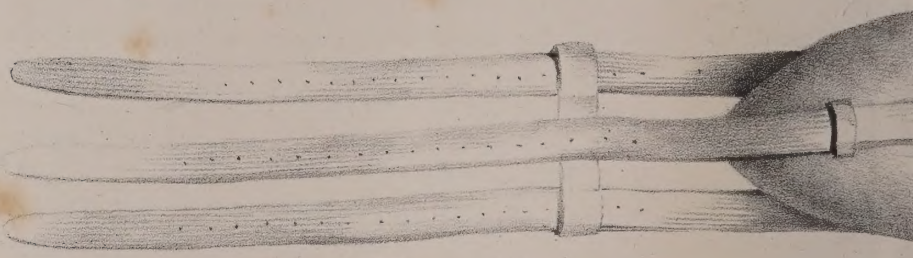

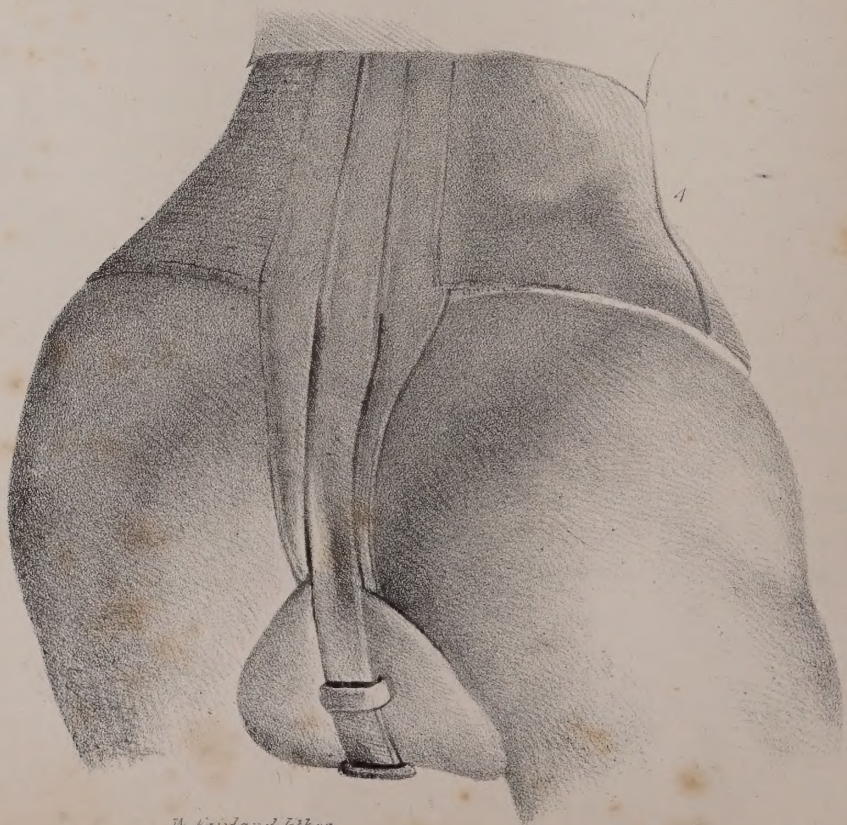

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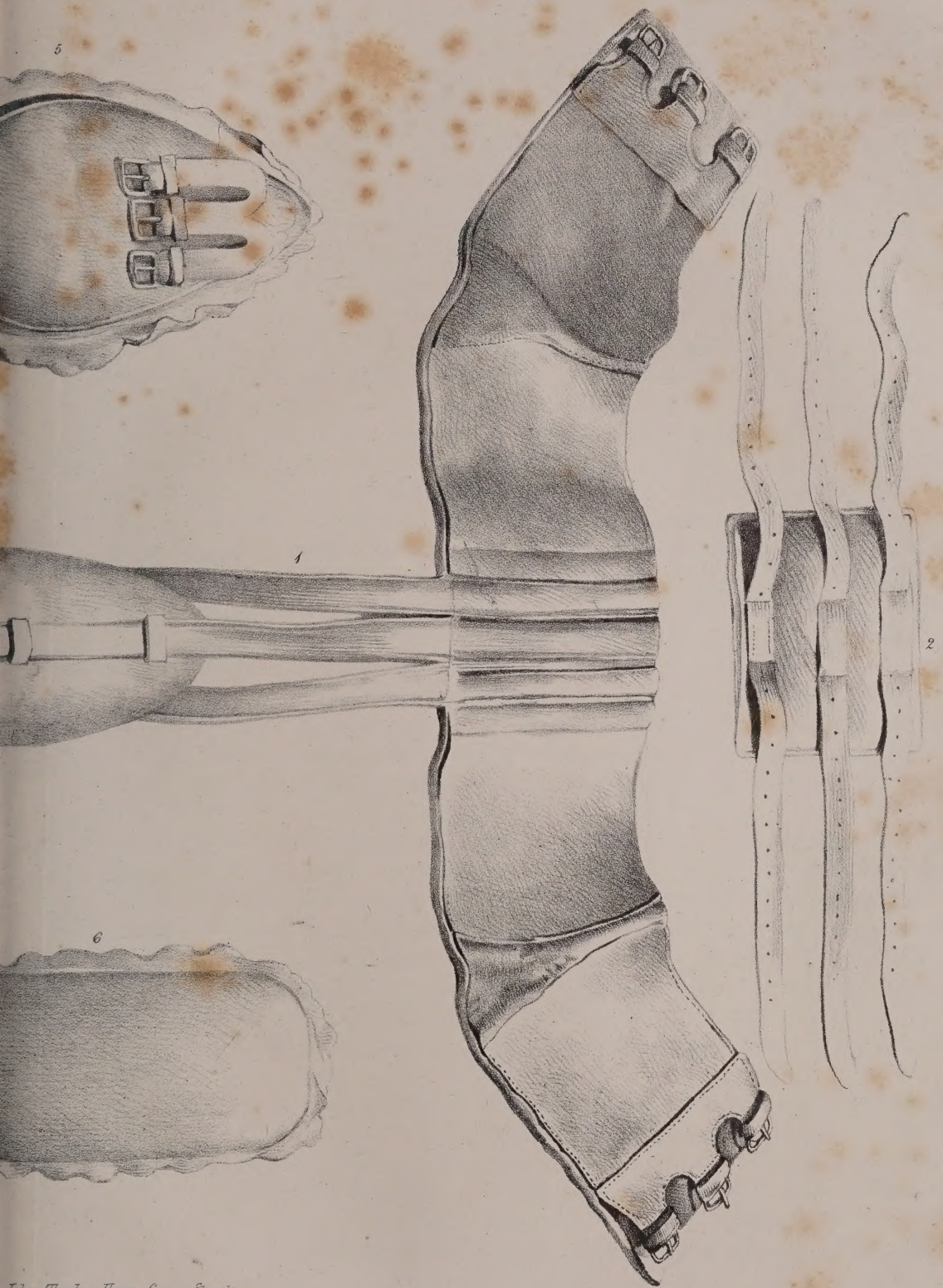


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should be entertained as a point of most prudent and necessary deliberation. Even at more advanced periods of gestation, it does not very frequently happen that puncturing the membranes is found necessary, or could be admitted as a defensible measure of practice. It has been already more than once observed, that accidental hæmorrhage during the latter months may occur even repeatedly without seriously affecting the strength of the subject, and that the patient, in the greater number of cases, should be allowed to proceed to the completion of the full period of her gestation without interference. In all such cases, therefore, it would be obviously an unwarrantable practice to puncture the membranes, or to perform any other operation whatever which could have the effect prematurely of inducing the action of labour. It should not be forgotten that the induction of labour prematurely, and the quickening of the process of parturition, when too slow, are properly the indications to be kept in view in the treatment of our present class of hæmorrhages.

Subsequently to the discharge of a sufficient quantity of the liquor amnii, especially if hæmorrhage should be going on, and the orifice of the uterus be closed and rigid, the practitioner would have to deliberate on the question of having recourse to the use of the plug, as was above recommended for the suppression of uterine hæmorrhage from placental presentation. The reader will of course observe, that the use of the plug in the present case would be to be employed not as a compress to the bleeding surfaces, but as an instrument of irritation of the orifice of the womb, for the purpose of exciting indirectly the body and fundus of that organ to parturient action. For this reason the plug should not be introduced with so much force as to occupy the cavity of the pelvis so impactedly as was formerly recommended for the relief of hæmorrhages from placental presentation: it should however be applied with sufficient firmness to answer its more immediate purpose of irritating the orifice of the uterus.

Among the other measures of treatment to be recommended for uterine hæmorrhage should be, to enjoin the observance of a state of perfect quiescence in a horizontal position of the patient's person, until the hæmorrhage shall have entirely ceased, and for many hours or days subsequently, or even for weeks or months, as the particular character of the case may especially indicate.

On the onset of a hæmorrhage, it frequently happens that the friends and family of the patient congregate numerously in her room, so as greatly to vitiate its atmosphere, both as to purity and temperature. This evil should be remedied.

Whatever might be required to be administered in the way of medicine or nutriment should be given cold, or at least coolish or lukewarm. In the midst of profuse hæmorrhage, ices might often be strongly indicated; and any aqueous drinks which might be useful or called for, should also be exhibited quite cold. The author indeed scarcely knows of a more ready remedy for uterine hæmorrhage, than half a pint, or even more, of cold water, taken at

one draught into the stomach. Care should indeed be taken that an exhausted subject should not be supplied with an excessive quantity of any cold fluid at a time, nor be too long exposed to the action of an intense cold in any form. Experience proves that the external application of cold produces its effect of arresting hæmorrhage by the suddenness of the shock which it occasions; and that if the object is not quickly attained, it is seldom secured by any prolongation of the means.

### Of Hæmorrhages from retention, protracted expulsion, and difficulty of removal of the Placenta from the Uterine Cavity, subsequently to the removal of the child.

The hæmorrhage which precedes labour sometimes continues during the performance of that function, and even sometimes supervenes after the birth of the child shall have been completed. Such a hæmorrhage, it is obvious, must have either a partial or an entire separation of the placenta for its cause. The first object of the practitioner in that case should be, the abstraction of the whole of the after-birth without loss of time, with a view to the placing of that organ in a state of competency to become speedily contracted. For this purpose there has been long established a rule of practice which must never be neglected. This rule prescribes the duty of forthwith introducing the hand into the uterus, and of removing the placenta by separation of one surface from the other WITHOUT VIOLENCE, but also without any unnecessary delay. This measure being effected, it seldom happens that the uterus does not almost immediately contract. But without entering further upon this subject, it would appear proper to make a clear statement of the facts, as usually detailed in books, connected with what has been called retention of the placenta. We are happy to adopt on this subject the very satisfactory exposition offered by the late Dr. Denman, in his Introduction to the Practice of Midwifery. His doctrine supposes a retention of the placenta from three different causes, namely, from inaction of the uterus, from irregular action of that organ, and from morbid adhesion of the placental tissue to the uterine surface. Inaction of the puerperal uterus seems in some cases to take place as it were capriciously from no evident cause. In other cases it would appear to be the effect of a state of exhaustion of the contractile power of the womb, from a tedious duration of the previous labour. In both cases, the retention of the placenta may be attended with no particular danger until it comes to be partially detached from the part to which it had been adherent during the pregnancy. As soon however as any part of it becomes separated, unless it afterwards almost instantaneously contracts, a flooding is the almost unavoidable consequence.

The second form of retention of the placenta may or may not be accompanied by a discharge of blood; inasmuch as the uterus, contracting irregularly, may or may not include within the contracting ring any portion of the placental tissue. If we suppose the whole of the placenta to be situated

above the spasmodically-contracting ring of the uterus, the whole of it may remain attached to, and within what in that case has been called the superior chamber of, the uterus. But if the place of attachment of the placenta should be identified with the locality of the contracting ring in question, a powerful contraction of that part of the uterus, the circumstance here especially to be noticed, will scarcely ever fail to be attended with a partial separation of the placenta, and of course to be followed by a discharge of blood. The third form of retention of the placenta, as has been stated, is that which arises from a morbid adhesion of the placental tissue to the uterine surface.

OF THE TREATMENT OF THE SEVERAL FORMS OF HÆMORRHAGE CONSEQUENT UPON RETENTION OF THE PLACENTA UNDER THE ABOVE CIRCUMSTANCES.—When the placenta is retained simply from inertia or inaction of the womb, and the practitioner can see no obvious cause for such an action, it is rarely productive of an alarming flooding. All that then would be necessary to do, would be to adopt the usual means calculated to excite uterine contraction. When no hæmorrhage presents itself, there can be no immediate demand for the adoption of any measures of an especially active character; and the reader may here be referred to the conclusion of the chapter devoted to the subject of natural labour, p. 968.

If, on the contrary, we suppose, after having waited for the expulsion of the placenta the usual length of time, a hæmorrhage suddenly to supervene, this complication would obviously form a second and more alarming case of retention of the placenta from inaction of the uterus. The cause of the alarm should be considered to be the hæmorrhage; and this is the point to which should be directed the instant and active attention of the practitioner. His first, and in many cases his only duty, would consist in introducing his hand into the uterus, and in forthwith separating and withdrawing the placenta. Under the circumstances of this case, we suppose, as has been already observed, a state of comparative inaction of the uterus. The discharge being the effect principally of a partial separation of the placenta, the security to be sought is to be obtained by its entire removal, and the subsequent speedy excitement of the uterus to contraction.

But let us next suppose the hæmorrhage to continue obstinately and unreduced after the removal of the placenta, by reason of the uterus remaining inactive and uncontracted: then it would no doubt be the most important object of the practitioner to stimulate the uterus to a state of active contraction, as speedily as possible and by the use of all the means best calculated to answer his purpose.

Among the measures upon which he should place his greatest reliance may be enumerated, pressure applied to the abdomen; the sudden abstraction of heat from different parts of the body by the application of cold media; mechanical and chemical irritation of the interior of the uterus; and the administration of

cordials, acids, and tonic medicines by the mouth. The reader is already acquainted with the author's opinion of the action of cold bodies as applied to different parts of the patient's person, and also as taken in the form of draughts of cold water into the stomach. There is however one other form of the application of cold which he has not yet adverted to; namely, that of cold water in ample quantities introduced into the rectum by injection. The immediate proximity of the rectum to the vascular tissues of the uterus would seem at once to suggest the transmission of the influence of a cold medium from one of these viscera to the other. It is difficult however to come to a correct conclusion in respect to the comparative value of cold thus applied, and that of the effect of abstraction of heat from the more accessible surfaces which have most frequently been made the subjects of this treatment; and admitting the efficiency of cold as exhibited by injection of cold water into the rectum, it is scarcely possible to assert the superiority of its action over an equally extensive application of it to the external surfaces of the body. The reason of this difficulty is obvious; namely, that wherever or however, if efficiently applied, the result is almost always found to be a sudden and great diminution, and in the majority of cases an entire suppression of the hæmorrhage.

Another great power calculated to subdue uterine hæmorrhage after the removal of the placenta, is, pressure firmly applied to the parietes of the uterus. This is especially valuable, by reason of its being immediately within the reach of the medical attendant, and most efficiently applicable to his object. On the onset of the hæmorrhage, when a strong contraction of the inactive uterus should be instantly promoted, a practitioner properly alive to the danger of the case under his management, applies his hand as it were by instinct to the body and fundus of the womb, for the purpose of exciting by pressure the required contraction of that organ. The hand must then be applied with great firmness, and continued in firm application for a considerable time. In the greater number of cases the uterus is felt to contract almost immediately under the pressure of the hand, and in a certain proportion of them the uterine parietes may afterwards be known to retain the hardness and resistance peculiar to the state of contractedness. It is, however, to be regretted, that the contracted state in question once produced does not always continue to be permanent, but is often followed by a state of perfect relaxation of the entire organ; when it is known to furnish an opportunity for a renewal of the hæmorrhage. A knowledge of this fact, and it may be represented as one of frequent occurrence, furnishes a rule most solicitously to be attended to, viz., that the practitioner should, if possible, persevere in the use of the pressure here recommended, until the uterus shall become permanently contracted, or until he shall find himself, from personal fatigue or exhaustion, incompetent to prolong the effort. Under these most formidable circumstances, it may be of extreme importance that the medical attendant chiefly in charge of the patient, should have the assistance of an active brother practitioner, to whom the duty of keeping up

the pressure now described might be transferred; inasmuch as the living hand, by reason of its competency to feel and report to its employer the effect of the pressure which it produces, is incomparably the best instrument that can be employed for the purpose described.

But profuse hæmorrhages may occur in the absence of all opportunity to obtain the assistance of a medical friend. In that case, what substitute can the practitioner, himself already exhausted, resort to for the production of the required pressure by the hand? The answer to this query must be, PRESSURE STILL, which however must be made by means of a suitable compress applied to the uterine region, and strongly bound to it by means of a broad belt or bandage coiled round the inferior part of the abdomen, across the umbilicus in front and immediately above the hips on either side. This belt should be made to invest the body of the subject as tightly as may be, and indeed with all the strength that the practitioner might be able to exert. The inconvenience incident to this mode of applying pressure, is that which results from the tendency of the bandage or belt in question to be thrown above the level of the umbilicus; whilst the greater part or the whole of the uterus might be situated inferiorly to that level. To remedy this inconvenience the author has often availed himself of the following expedient:—Let one end of another bandage be firmly secured to the principal belt already applied, at or in the immediate neighbourhood of the upper part of the sacrum; whence let it be carried between the nates and thighs towards the anterior surface of the body, where it should be equally securely fastened to the first bandage, at a point in a direct line above the pubis. The whole of this apparatus will obviously form a double T bandage, an anterior and a posterior one. Beneath the upper part of the perpendicular line of the anterior T, a firm padding shoud be imposed upon the uterine region, where the pressure should especially be applied. Now if this double bandage, with its accompanying compress as now directed, be applied with adequate firmness, the practitioner might almost always calculate upon the speedy attainment of his object. If however, upon examination, it should not appear that sufficient pressure could be ensured by the action simply of the bandages and compress as now proposed, it might no doubt be readily increased by thrusting between the perpendicular line of the anterior T and the integuments of the patient, immediately above the pubes, folded pieces of cloth, bundles of stockings rolled up as they are put in drawers when sent home from the wash, or any other packets of linen or cotton that can easily be made available for such a purpose. The apparatus now described suggested to the author many years ago the idea of a uterine tourniquet. Its materials are so simple and common as to be easily obtained almost in every house. The bandages may be made either of belts of flannel, or of pieces of strong linen or calico; or these may be substituted by quarter breadths, or more or less of breakfast tablecloths, or of old sheeting, cut out suitably to the lengths required. The practitioner must not hesitate to use

any of these latter articles on account of their value to a poor family, should nothing more convenient be produced; since their value cannot be put in competition with that of the life so imminently at stake. The reader will no doubt sufficiently comprehend the nature of the above piece of mechanism. Its objects are first, to produce pressure, as already stated, upon the hypogastric region, for the purpose of exciting the uterus there lodged to a state of firm contraction; and secondly, in case of its failing to produce that effect, to cause the anterior walling of that organ to be strongly pressed against its opposite posterior surface, in order that its corresponding surfaces might thus be made, mutually compresses to each other; which, even in the absence of a disposition on the part of the uterus to contract, could scarcely fail to suppress the hæmorrhage.

If we suppose the several bandages described to be sufficiently tightly drawn, and the placenta to have been attached to any part of the body or fundus of the womb, it is obvious that the patient might thus be placed in a state of perfect security against any effusion of blood into the interior of the cavity of the uterus.

But, if we presume the placenta to have been attached to the neck and orifice of that organ, the abdominal compress now proposed would alone be no adequate security against a further discharge of blood, which therefore would still remain to be provided against. This object happily may also be easily effected in the following manner. Let the perpendicular line of the T, in the anterior T bandage, be made to consist of two parallel bandages capable of being separated from each other at the outlet of the pelvis, sufficiently to leave an intermediate space through which pieces of sponge, or any other convenient substances of small size, might be readily conveyed into the vagina, so as completely to fill it, as already recommended on a former occasion. When the vaginal passage shall thus have been charged to actual impaction, a good thick compress should be applied to the external orifice, and there kept firmly pressed by the action of the anterior T bandage, which should be drawn with sufficient tightness to prevent, if possible, even an oozing of blood from the parts. A subject treated by means of a uterine tourniquet, such as we have now explained, might be said to be actually case-hardened against the possibility of further flooding, as long as the apparatus should be permitted to remain applied; and her only danger would be limited to the effect of the loss of blood which she might have already sustained. Persons not possessed of much mechanical contrivance, nor sufficiently practically adroit to effect the application of the bandage soon or firmly enough to ensure all the advantage which might be expected to result from it, might perhaps be disposed to complain of its clumsiness and unsuitableness for its purpose. The author has been chiefly induced to recommend it for its economy and accessibleness, and not by any means with the intention of superseding a better-contrived uterine tourniquet. The reader indeed will find represented in plate xlvi. the model of a regularly-constructed instrument

of pressure already partially known to the profession under the designation of uterine tourniquet; and also, among the tabular descriptions of the plates, a sufficient account given of its mode of application.

Of the Retention of the Placenta from Spasmodic Contraction of the Uterus.—Of retention of the placenta from this cause, it may be useful to state that there are two varieties, of which one is unaccompanied with hæmorrhage, whilst the other is essentially a cause of profuse flooding. The former variety requires little treatment, and may be entrusted in most cases, under proper vigilance, to the influence of time, and to that of a full dose of opium. Many cases are met with of retention of the placenta from this cause, which terminate very satisfactorily in two or three hours, by a spontaneous expulsion of it, independently of any interference whatever. During the lapse of such a period of time, the uterus, although it might not contract sufficiently strongly at any one moment to expel the placenta, might be expected to be considerably diminished as to its capacity, by a scarcely-perceptible action of its parietes, the result of its tonicity, which might have the effect of placing it in a situation of adequate tendency to contract, to warrant the introduction of the hand, for the purpose of removing the after-birth. Perhaps firm pressure of the hand on the hypogastric region might then suffice to produce a more vigorous contraction of the womb, although at an earlier period it had failed to produce that effect. A precaution of great importance to be strictly observed in the management of a case of this kind would be, not to introduce the hand prematurely, nor at all events to separate the placental tissue from the uterus, until the practitioner should be quite confident that these measures would be immediately followed by a firm contraction of that organ. The author has often in cases of this description derived the best effects from a full dose of opium; that valuable medicine having as he verily believes the double power of subduing the violence of the spasmodic action, and at the same time of promoting what may be called the natural and organic contraction of the uterus. When the uterus shall have so far contracted as nearly every where to close upon its retained placental contents, the medical attendant might then, as soon as might be convenient to him, effect its removal by the introduction of the hand.

Our second variety of retention of the placenta from spasmodic contraction of the uterus, is that form of it which is attended with hæmorrhage. In this case a portion of the placenta is presumed to be separated from the uterine surface, by the coincidence of its locality with the spasmodic ring, constituting what has been very frequently called the hour-glass contraction of the womb. The nature of this injury is such as to forbid the hope that the discharge could be expected to cease, without the interference of art for the removal of the placenta. That duty should indeed be performed without delay, since the uterus could not be placed in a situation to become permanently and suffi-

ciently contracted, to effect its total separation from the placental tissue; the partial detachment of it being to be considered as the proximate cause of the hæmorrhage. The practitioner must not hesitate to perform this duty at once on his own responsibility; the nature of the case affording no time for consultation, nor of delay for any other purpose. The author has more than once known fatal events to supervene, from procrastination, under these formidable circumstances. The reader, on the other hand, should be apprised, and the author begs to state his own experience with great confidence on this point, that he can have no ground for hesitation as to the duty of instantly effecting the entire removal of the placenta whenever a profuse discharge of blood shall furnish him with the evidence of an already partial separation of it. This indeed is his first and paramount duty under such circumstances, and in comparison with all other measures, THE ONE THING NEEDFUL that he has to attend to. Should the discharge continue after the removal of the placenta, a case of very rare occurrence, it should be arrested by the application of cold, and by the use of the other means which have been already recommended, and amply and sufficiently urged upon the practitioner's attention.

OF RETENTION OF THE PLACENTA FROM MORBID ADHESION OF ITS TISSUE TO THE INTERNAL SURFACE OF THE UTERUS.—This case supposes the previous existence of structural disease, either of the placenta, or of the uterus, or of both. Indeed, one of these tissues can scarcely be the subject of disease without the other. The morbid result may, however, generally be presumed to commence in the uterus, in the form of an inflammatory affection of one of its parietes. That organ, when locally inflamed, becomes adherent, by the action of such inflammation, to the placental mass, by the intermediation of an extraordinary vascular tissue, which it is well known adhesive inflammation generates. The circumstance which principally deserves to be mentioned in this place is, that the vascular tissue thus produced is possessed of much greater tenacity than that of the ordinary vascular tissue of the part in its natural and healthy state, by which the placenta is connected to the uterus at its original surface of implantation. From the excessive tenacity of this connecting medium, the uterus is found incompetent, after the delivery of the child, to rid itself of the after-birth, which therefore becomes obstinately retained.

For the treatment of this form of retention of the placenta it has been proposed to extract it, by a force sufficient, at all events, to effect its separation. By the adoption of this practice much mischief from excessive irritation, contusion, and even laceration of the uterine tissue, has been inflicted by pertinacious attempts thus made to effect the removal of the morbid parts of the placenta. It has been recommended by others to abandon such cases to the exclusive efforts of nature; and these have, in some instances, very satisfactorily re-

sponded to their wishes. But this treatment, in too many others, has terminated most unfortunately, by the fact of its having frequently laid the foundation of putrid peritoneal fevers, and of fatal hæmorrhages. The proper, and indeed the only safe practice to be adopted in such cases, is to withdraw, by careful detachment, all of the placenta that is found NOT morbidly adherent to the uterine parietes, leaving the diseased remainder to such kindly offices of nature as she may be competent to exert for their expulsion. By the adoption of this prudent management, a very valuable proportion of cases have been known to terminate favourably, by a very slow and gradual process of decomposition of the morbid remnants of the placenta, and final escape of them from the uterine cavity. This result, however, has not always taken place, without much previous disturbance, both of the uterine and general systems; but it is sufficiently gratifying and encouraging to know, that the patient is likely ultimately to recover, after having been exposed to the extreme danger in which her previous situation had been involved.

Before we conclude this chapter it will be reasonably expected that we should take notice of some other measures of treatment which have at different times been recommended by very respectable and experienced practitioners. By some, opiates have been very strongly recommended in large quantities; such as from drachms upwards to half ounces or more, with a view, speedily if not entirely and at once, to suppress profuse hæmorrhages. Associated, as severe uterine hæmorrhages often are, with much nervous restlessness and irritation, full doses of opium may, in such cases, be reasonably expected to have the effect of repressing, or at least of greatly moderating, such symptoms; and the author can safely say, that he has not unfrequently seen excellent effects produced by their exhibition. Under the circumstances adverted to, the practitioner may almost at any time exhibit a drachm of opium in consecutive doses with perfect impunity, provided the interval after each dose shall not be much shorter than a quarter of an hour; but in a few cases of extreme exhaustion, perhaps larger quantities than here prescribed might be entrusted to the discretion of practitioners of extensive experience. Full doses of opium are usually inductive of nausea and vomiting, after the lapse of some hours subsequently to their exhibition. But those results are of trifling ultimate consequence, in comparison with the great advantages to be expected from the successful use of opium in repressing the extreme nervous irritation which its exhibition is eminently calculated to subdue. We have already adverted slightly to the duty of observing perfect quiescence, in combination with the horizontal position of the body, during a profuse uterine hæmorrhage. The rest here recommended should be directed to be made absolute, or it may not suffice to ensure all the advantages for the attainment which it is now urgently recommended. Mrs. B. was the subject of a very tedious labour, which was finally completed by means of the forceps. During the latter period of the struggle, the patient's pulse became so much enfeebled as to create consi-

derable anxiety as to the ultimate event of the case. Immediately upon the delivery being effected in the manner already stated, a fœtid coagulum, partially involving the umbilical cord and a great portion of the placenta in a putrid state, was expelled with considerable force from the vagina, and was forthwith followed by a prodigious stream of uncoagulated and apparently arterial blood from the uterus. The patient instantly collapsed into a state of the most dangerous syncope. As soon as she recovered well enough to swallow, small draughts of cold water were exhibited to her; cold was applied to different parts of the body externally; pressure was effectively made upon the abdomen by the late Dr. John Powell, who had been originally engaged to attend the patient during the confinement. The hæmorrhage nevertheless was not entirely subdued; and something more than an oozing of blood continued to trickle from the vagina for upwards of two hours. At length the poor lady became dreadfully exhausted, and ghastly; but the scene in the progress of the case presented something of variation, by the accession of a state of extreme restlessness and jactitation; and on a sudden, the patient expressed a wish to be moved into a new position, and upon non-compliance with it, threatened to accomplish it by her own efforts, even if she should die in the attempt. Her attendants considered themselves obliged to give her the required assistance, which was done in the most careful manner, to the almost entire exclusion of personal exertion on her own part. She was gently moved and placed high upon her bed in a horizontal posture. This trifling movement left her in a state of such profound exhaustion, as to make it doubtful for some minutes whether she continued to breathe. Even when the hæmorrhage had totally ceased, and she had in a great measure rallied from the immediate effects of the flooding, her final recovery remained long doubtful. The case is here quoted to urge the importance of recommending absolute rest to persons similarly affected.

The author has little to say upon the different modes which have been made use of, to excite contraction of the uterus by irritating its internal surface.

A French writer strongly recommends the introduction of a large bullock's bladder into the uterus, which in the uterine cavity he directs to be blown into full distention, for the purpose of being made to act as a compress upon the bleeding surface of the un-contracted womb. The immediate object of this device must obviously tend to keep the uterus in a state of distention; whereas the true principle of the practice deemed in this country most rational and successful is, as soon as possible, to excite that organ into active contraction. The treatment proposed therefore would appear to be incorrect in principle, as well as little calculated to engage our confidence by any promise of great practical utility.

Another writer of the same nation recommends the introduction into the uterine cavity of a large lemon imperfectly quartered, by two sections made across it at right angles as far as, or a little beyond, its centre. He then directs it to be left in the cavity of the womb for the purpose of being strongly com-

pressed and eventually expelled by the excited contraction of the uterine parietes. He adds that he had found this expedient well calculated to subdue puerperal floodings. To a certain extent this practice is liable to the same objection as that of the other French writer. Beyond this, the author cannot take upon himself to make any positive statement as to its merit or otherwise, inasmuch as he has no practical experience of its application.

The principal chemical irritant usually employed for the subduction of uterine hæmorrhage after delivery, is an injection made with one part of vinegar and two of water conveyed into the uterus with a syringe; which, according to the testimony of some of the most respectable members of the profession in our own country, must be possessed of considerable power to suppress floodings. Of this treatment also, the author regrets that he cannot give his testimony very positively, either for or against it; having almost always preferred the practice by pressure, applied in the several modes already sufficiently detailed.

Moreover, the author has seldom had recourse to the introduction of the hand for the purpose of exciting irritation. But in those cases where he has adopted that course, he has indeed sometimes succeeded; although at other times, and perhaps equally frequently, he has to regret that he has been greatly disappointed as to the result.

There is one measure yet to be noticed, which of late years has been greatly lauded for its efficacy, not so much indeed as a means of arresting puerperal hæmorrhage as of restoring the balance of the circulation when extremely depressed by a flooding already sustained; and as being calculated eventually to promote the recovery of a patient, all but on the eve of expiring. The reader will here easily recognise the practice alluded to, to be that of transfusion of blood, from a healthy subject, to the exsanguined victim of puerperal hæmorrhage. This practice of transfusion, after a total neglect of it for upwards of a century and a half, was revived some twenty years ago by a talented physician of this metropolis. Since that time, many cases in the practice of that respectable individual, as well as several others in that of his friends and disciples, have been recorded, both of its apparently successful application, and also of its entire failure. How far the results have been sufficiently numerous to warrant a favourable opinion of the treatment by transfusion, which Dr. Blundell has certainly done much to recommend, it may not perhaps become the author to assert; inexperienced as he confesses himself to be in the practical detail of the subject. The ultimate conclusion in a point like this must essentially depend upon severe accuracy in the conduct of the experiments, by which the doctrine must be sustained, as also on the honesty of the testimonies which from time to time have appeared, or may hereafter appear, in support of its pretensions. On these points he feels that he is not competent even to entertain an opinion. But there are some other circumstances which he may be permitted to notice, which appear to him to militate strongly against

the probability of the projected treatment ever becoming permanently established. He would observe first, that the quantities of blood transfused in the treatment of the cases in question, have been generally much too small to warrant the conclusions which have been drawn from them as he thinks with too much confidence. The average quantities stated in the published reports of the cases in question have seldom exceeded seven or eight ounces; and, as far as the author knows, the largest quantity has not quite equalled sixteen ounces. Now how can any cautious reasoner and experienced physician venture to predicate, either favourably or otherwise, of the results of cases made the subjects of experimental trials of this kind, amidst such nicely-balanced circumstances and such various grounds of hopes and fears? Might it not be supposed, without any great violation of probability, that an adult female PREVIOUSLY IN GOOD HEALTH, AND THEREFORE CONTAINING MANY QUARTS OF BLOOD IMMEDIATELY BEFORE THE TIME OF HER CONFINEMENT, might eventually recover from a state of great exhaustion from hæmorrhage, almost as certainly WITHOUT, as with the paltry addition of six or eight ounces of foreign blood? It is attested by the evidence of daily-occurring facts, that women sometimes recover from states of the most desperate exhaustion, and after their lives had been all but totally despaired of by persons of the most competent experience in such matters.

Again, experience appears to sanction the presumption that the capacity of the arterial system considered in connexion with its influences on the nervous and respiratory systems is much too limited, to make it probable that it should ever, by any variations or modifications of future trials, be brought to admit and to adopt for its own purposes, within the period of an hour or even of some short fractional proportion of that time, sufficient quantities of foreign blood to ensure the recovery of one woman in a hundred, and so serve eventually to promote the establishment of the practice of transfusion.

Another reason why the author feels much less sanguine as to the eventual success of the practice by transfusion is, that after a trial of about fifteen years or more, it has not yet become finally established. If its pretensions had not, in fact, already failed to come up to the expectations of its patrons and the hopes of the profession, he feels confident that it would have been established long ago. It cannot be said that it has wanted the advantage of being well introduced to public notice, nor that the first experiments by which that introduction was made were not beautifully conceived, and as far as the author can judge, performed with the greatest adroitness and accuracy. But it is nevertheless a fact, that with all these advantages, the practice of transfusion is now less frequently had recourse to in the treatment of uterine hæmorrhage than it was ten years ago.

OF LABOURS COMPLICATED WITH RUPTURE OF THE UTERUS AND INJURIES OF OTHER TISSUES MORE IMMEDIATELY INTERESTED IN SEVERE AND ARTIFICIAL BIRTHS.—The rupture of the gravid uterus at an advanced, or at the full

period of gestation, is to be ranked amongst the most dangerous and alarming casualties incident to the function of parturition. It may be occasioned by mechanical violence from without; by excessive action of the uterus itself in circumstances unfavourable to the safe completion of the labour; by its ordinary action too long continued or inordinately resisted in its efforts; and by ill-directed movements of the practitioner in the performance of obstetric operations, whether by the hand or with obstetric instruments.

When the accident takes place from mechanical injury, it is called ACCIDENTAL rupture; but when from irregular action of the uterus itself, it has received the designation of spontaneous rupture of the womb. The epithet spontaneous has been applied to many cases of laceration, when it has occurred during the presence of the practitioner's hand in the uterine cavity; which therefore might with more propriety have been called ACCIDENTAL, because really produced by mechanical violence. Rupture of the uterus, from violent action of the organ itself, may take place under two varieties of circumstances; namely, first, when the pelvis is of a natural size, and the orifice of the womb undilated, and in a state of extreme rigidity, and therefore undilatable by any safe exertion of the natural powers; or it may happen from deformity of the pelvis, the membranes being ruptured, the pains at the same time violent, and the waters evacuated.

Laceration of the womb may take place in any direction. When the injury is inflicted by the practitioner's hand, the rupture is for the most part found after death occupying the fundus, or a superior part of the body of that organ. To this rule however there are some exceptions. When it takes place spontaneously in consequence of inordinate resistance, from want of sufficient capacity of the pelvis, it usually implicates the neck and shoulder of the uterus, which are known ordinarily to correspond with the localities of the promontory of the sacrum behind, and of the linea ileo-pectinea laterally and anteriorly. These ruptures most frequently take place transversely and very rarely in longitudinal directions.

Lacerations of the womb have usually made their way through the entire substance of its parietes; although in some rare cases the loss of continuity has only implicated its peritoneal tunic. Of this form of the accident, independent of external injury, the author has known only two examples; of which one occurred in the practice of Sir Charles Clarke, and is published in the first volume of the Transactions of the Medico-Chirurgical Society; and the other within his own experience.

Of the latter case the following is a brief sketch. The subject of it was a poor woman, a patient of the Maternity Charity, who had waited upon a committee of gentlemen to make application for a contribution out of funds which they were appointed to distribute. But the pecuniary assistance sought, for reasons not here necessary to state, was refused. This denial was instantly productive of a total change in her physical condition. From being able to have walked

about half a mile to the place of meeting of the committee in question, she was suddenly bereft of all capacity for locomotion; and was not able to return home without the assistance of several friends, nor with that assistance until after the lapse of some hours. In the course of the same afternoon, she was taken with labour-pains. The labour soon became complicated with a slight sanguineous discharge. About midnight, she was seized with successive faintings, which induced the midwife to send for the author's assistance. He found the wretched patient in a very alarming state, exhibiting an appearance of much distress and ghastliness, with short and difficult breathing, and the other characteristic symptoms incident to lacerations of the womb and its appendages. The uterus however was not totally incompetent for expellent efforts, and the head of the child was found being gradually propelled towards the outlet of the pelvis. A dead child was born at four o'clock in the morning, and the placenta was thrown off spontaneously, and shortly after withdrawn from the vagina by the gentlest traction. No hæmorrhage followed, nor was there sustained throughout the whole process of the labour the loss at most of twenty ounces of blood. The patient gradually sunk after the labour was completed, and died in about three hours and a half subsequently. At an early hour on the following day the abdomen was inspected. Some convolutions of the intestines were found floating in a great quantity of a dark, grumous, thickish fluid. On first view, it was considered probable that the uterus had sustained, as in ordinary cases of this nature, a laceration throughout its whole substance: but upon accurate examination of the actual injury, it was discovered that the source of the sanguineous discharge was a rupture of about two inches in length, together with several smaller fissures, of the peritoneal covering of the posterior walling of the uterus, of which the deepest scarcely entered the twelfth of an inch into the subjacent parenchyma. During the moment of the first shock, which appeared to decide the fate of this poor woman, she felt, as she expressed herself, "as if struck with instant death." Was the child in this case, which was known to be alive in the early part of the morning, thrown into convulsive action by the sudden moral shock which the mother sustained; and in consequence of the struggles of the fœtus so produced, could the fatal injury have arisen? That it might is not at all events an improbable supposition.

Again, the author has seen one example of rupture of the whole of the parenchyma of the uterus, without implicating its peritoneal covering. The injury in that case was inflicted by manual violence. Hæmorrhage supervened in about twenty minutes after the mischief was done, and the patient soon after died of flooding.

Lacerations of the uterus happen for the most part during labour, especially when they occur spontaneously, and at the full period of gestation; whereas ruptures produced by mechanical injury from external violence, may happen during any of the earlier, as well as of the latter months of pregnancy.

Rupture of the uterus is usually preceded by certain threatening symptoms.

These symptoms too unequivocally in most cases point to the event which is to follow. Hence the duty of the practitioner to pay the utmost attention to all the circumstances which may be supposed to indicate more than ordinary difficulty in the performance of the function of parturition.

The circumstances known to precede the deplorable accident under consideration, and usually recognised as precursory and premonitory symptoms, may be briefly enumerated as follows; 1, An undilated orifice of the uterus after the escape of the waters. 2, A deformed pelvis. 3, Violent uterine contractions recurring every five minutes, and alternating with severe superadded pains of a spasmodic character in the back and abdomen. 4, The child felt strongly marked through the parietes of the abdomen, and the uterus extremely tense during the pains, upon the hand being applied to the hypogastric region. 5, A state of extreme excitement of the heart and arteries, accompanied by inordinate irritation of the nervous system. 6, A febrile temperature of the body. 7, A sudden seizure usually of an inferior part of the abdomen by a pain of extraordinary intensity, different from and accessional to the parturient pains previously sustained. When the above symptoms, or the greater number of them, occur during the progress of a severe labour, a rupture of the uterus is constantly to be dreaded.

The symptoms indicative of the actual rupture cannot ordinarily be mistaken.

1. In general at the moment of the rupture, the patient feels the laceration, and sometimes exclaims that something has given way within her, and generally inquires of the attendants, if they had not overheard the noise which had accompanied the accident. 2. The bearing-down or parturient pains, from having been previously excessively violent, suddenly cease, never again to return. 3, Immediately after the accident, a small or at most a moderate quantity of blood is discharged from the vagina. To this rule however there are some exceptions, which when they occur are to be imputed to the pelvis being completely occupied by the head or other presenting part of the child. At nearly the same moment the presentation is found in many cases to have receded out of the cavity of the pelvis into that of the abdomen. To this rule also there are exceptions. The head or other presenting part being strongly impacted within the pelvic cavity, its retrocession becomes impossible. When the child recedes, if not completely enveloped in the membranes, it is forced, through the aperture furnished by the laceration, into the abdominal cavity. In many cases breathlessness and syncope speedily supervene; but in others the first shock sustained by the living powers would seem to be less alarming: soon after, however, the mortal injury is followed by its characteristic indications, a peculiar variety of difficulty of breathing, which might be called costal respiration; a rapid reduction of the temperature of the body, especially of the extremities; a sudden change of character of the pulse both as to strength and regularity; ghastliness of the countenance; a total collapse of the powers; and, finally, deliquium animi, the immediate forerunner and prototype of death.

The fatal event sometimes takes place in the course of ten minutes or a quarter of an hour after the accident. More frequently the patient survives for six, eight, or twelve hours. But in the great majority of cases she dies within twenty-four hours after the receipt of the injury. The author has indeed known several instances of persons who had survived three, four, five, and six days. Steidele, as quoted by Dr. Burns, relates the case of a patient who lived till the twelfth day. One of Dr. Garthshore's patients lived till the twenty-sixth day after the accident.

There are recorded many histories of lacerations of the uterus, a small number however, in proportion to all the cases reported, of which the subjects eventually recovered from the effects of such ruptures. There occurred in the author's practice, about fifteen years ago, a case of rupture of the uterus, which by extension became continuous with a laceration of an inferior portion of the bladder. The subject of it was a patient of the Maternity Charity, under the care of one of the midwives of that institution, when the accident happened. She eventually recovered, but not without the damage of a permanent incontinence, in consequence of the injury sustained by the bladder. The occasional cause of the accident was the want of sufficient space at the superior aperture of the pelvis. A case also of recovery took place some years ago in the author's consultation-practice. The subject of it was a pauper in the parish workhouse of St. Clement Danes. The child, which had escaped into the abdominal cavity, was withdrawn through the natural passage by bringing down the feet. The head was opened and pretty completely emptied of its contents before any considerable traction was made use of to bring it into the pelvis. The patient sustained very alarming symptoms during the second and third weeks after her delivery; but she ultimately perfectly recovered. The case has already been reported in the Transactions of the Medical and Chirurgical Society by Mr. James Powell of Great Coram Street.

Notwithstanding that rupture of the uterus was very generally believed by the surgeons of this country to be essentially incurable, till the period of the case of Mrs. Manning of Clare Market, as reported by Dr. Douglas, in his very excellent essay on this subject, there are now existing records of many unquestionable examples of recoveries from it. The more learned reader, however, is aware that cases successfully treated were reported by German and other continental writers upwards of two centuries ago. See Douglas's Observations on an extraordinary case of ruptured uterus. 8vo. Johnson. London, 1785.

Of the Treatment.—From the above brief historical sketch of uterine ruptures, the reader may easily comprehend the nature of the treatment now to be proposed. It is obviously distributable into the two principal indications of prophylactic and curative. Should the series of symptoms which the author has above enumerated as precursory and premonitory be opportunely recognised, the treatment by prevention would be obviously that to be forthwith

adopted; and their occurrence should indeed furnish a peremptory rule to young practitioners for treating all tempestuous labours by ample bleeding and the exhibition of opiates in the first instance. After the inordinate excitement of a labour of this description shall have been thus adequately subdued, the practitioner will have leisure to examine his case more accurately in all its bearings; to ascertain the amount of whatever rigidity of the neck and orifice of the uterus may yet remain; and also to investigate any UNUSUAL causes of resistance that may exist within any part of the parturient passage. He will have time to ascertain with sufficient accuracy, the actual dimensions of the pelvis both at its brim and its outlet; the precise degree of advancement of the child's head, or whatever other presentation it might happen to be, into the pelvic cavity; and to consider upon the whole what ought to be done for the immediate relief, as well as for the eventually successful issue, of his case. He will of course have to deliberate, whether he should proceed to effect the delivery by art, or whether, after having subdued the violence of the labour, he might not safely entrust its yet dubious fate to the further cares of nature. If the latter, he will of course have to exercise great vigilance during the powerful struggles which the uterus might have still to exert for the safe propulsion and final expulsion of the fœtus. If the former, he will have to determine on the best mode of effecting artificial delivery, which however it is not at present our immediate object to explain. As a rule applicable to all cases of delivery by art in states of extreme danger to the mother, it would be his duty always to consider her safe recovery as the preferable object of attainment, whenever the preservation of both lives might appear impracticable.

OF THE TREATMENT SUBSEQUENTLY TO THE ACCIDENT.—In undertaking this part of his duty, the practitioner may well consider himself as about to advance on the services of a forlorn hope. Inasmuch however as the laceration of the womb is not an essentially mortal accident, such services must unfortunately be sometimes undertaken, and therefore ought to be judiciously executed. The practical question which would here first present itself for consideration would be, whether art should be employed to withdraw the child from the abdominal cavity, or wherever else it might be found; or whether nature might be entrusted to make use of her best exertions to repair the damage sustained, and ultimately to rescue the patient from the imminent risks incident to her alarming situation. A lady, under the obstetric superintendence of a respectable female practitioner, became the subject of rupture of the uterus, during a temporary absence of her midwife. On her return, the latter found that the head of the child, which she had previously felt engaged to some depth within the brim of the pelvis, had retroceded beyond the reach of an ordinary examination per vaginam. In short, by an external examination, she ascertained that it had escaped into the abdominal cavity. The late Dr. John Sims was sent for without delay. That gentleman immediately confirmed the midwife's alarming suspicions; but was greatly surprised to find, that the symptoms

attendant on the accident were scarcely sufficiently deplorable and characteristic to make it quite certain that the rupture of the womb had been actually incurred. After deliberating for some time on the treatment which in such a delicate state of things he should adopt, Dr. Sims finally determined on doing nothing, until in the further progress of the case, some more decided indications should be furnished. The symptoms continued to be very mild for several subsequent weeks, when being privately engaged in a certain effort of nature, the patient was alarmed by the evacuation per anum of a putrid fleshy mass containing several phalanges of fœtal digits, both of feet and hands, which were successively followed by other portions of the fœtal skeleton, and eventually by all the constituent bones of the skeleton, with the exception of those of the head. The patient in the mean time continued to enjoy a tolerable state of a somewhat broken health. When so much of the child was thus removed from the abdominal cavity, the unfortunate subject of the case was advised by an ignorant neighbour to take a ride over the roughest streets of the city in a hackney-coach, for the purpose of having herself well shaken, in order to ensure a similar evacuation of the yet remaining bones of the fœtal head. This experiment was urged upon her by much assurance on the part of her friend, that it had quite succeeded in the case of another lady within the circle of her immediate acquaintance. The advice was taken; but the patient became an early victim to her easy and thoughtless imprudence; for after the lapse of four days she died of peritoneal inflammation.

The following case, greatly abridged, of rupture of the uterus has been communicated to the author by his valued friend Mr. Windsor of Manchester, and is here inserted in connexion with others, to show the strong disposition of nature to repair the most serious accidents to which she is liable in the performance of her functional actions. The patient had been formerly the subject of uterine hydatids. Her last labour commenced naturally, but the waters were discharged before the mouth of the uterus had become dilated beyond the size of a half-crown piece; and after continuing some hours with gradually increasing violence, all parturient pain suddenly ceased. No alarming symptoms however ensued. At the end of six weeks some appearances of an abscess were discovered near the umbilicus, which in about a fortnight gave exit to a piece of bone. This was followed in the course of the two succeeding months by many of the bones of the trunk and extremities, together with some of the more solid and undigestible portions of the patient's food; while at the same time the cranial bones were escaping by the vagina. The patient's general health up to this period had not greatly suffered; but now the alimentary substances were no longer discharged by the wound, the bowels became deranged, and death followed in a few days. Upon post-mortem examination, the small intestines were found firmly adherent to the uterus, and communicated with its cavity by four apertures. The undischarged fragments of the fœtus, together with some feculent matter, were contained in the uterine cavity.

At the period of the author's studies at the University of Glasgow, Dr. Jeffray, the eloquent professor of anatomy in that school, brought into the theatre, for the subject of one of his lectures, a preparation, which he had just obtained from the abdomen of a woman who had recently died at Dumbarton. Before he commenced the examination of the mass, he premised a brief sketch of what he knew of its history; which as well as the author can remember was to the following effect. The subject of the case was a patient at the Royal Infirmary of Edinburgh about five-and-twenty years anteriorly to the date of the learned professor's narrative, and when he was himself a student at the University of Edinburgh, and also a pupil of the Royal Infirmary in that city. The patient was taken into the hospital as the subject of dropsy; for which she was treated during a period of some weeks. Under these circumstances she was suddenly seized with a violent pain of her abdomen, which lasted for many hours, and then gradually subsided. The symptoms consequent upon these results excited no extraordinary alarm, and after the lapse of a further period of some weeks, she recovered well enough to be dismissed, cured of all her ailments, with the exception of her unusual magnitude. She accordingly survived the accident five-and-twenty years. The anatomical piece brought into the lecture-room was of a globular form, and appeared to be about the size of a man's head, or perhaps somewhat larger. For this form it was chiefly indebted to its external covering; which consisted of a thick greyish incrustation, having very much the appearance of the crust of an old Cheshire cheese. This shell was gradually cut into by the professor, and partially removed in successive slices, until at length the scalpel was impeded in its progress by something which formed an obstacle to its course. This was ascertained to be a fœtal extremity, which was presently brought into view from the interior of the mass. Within the shell there was found, folded as in situ in the gravid uterus, the whole of the fœtal skeleton. The patient had died of a disease entirely unconnected with the state of the uterus and its contents. She had therefore perfectly recovered from the consequences of the accident, and had survived it as we have seen five-and-twenty years. That the case however was one of rupture of the uterus, and not of any extra-uterine tissue, the author does not now positively recollect; and he regrets that he has not since been able to ascertain the precise fact, in consequence of Dr. Jeffray having mislaid, and probably for ever lost, the notes which he took of the case. A case already referred to in a former page of this work, see p. 941, may here again be noticed in proof of the tendency of nature to heal her wounds; and when she fails in that object, to exert her best efforts in the attempt. The extraordinary case in question, generally believed to have been one of ventral pregnancy, was probably in fact an example of the escape of the child into the abdominal cavity, in consequence of rupture of the uterus. However that may be, the patient lived for many weeks after the date of the alarming commencement of her indisposition. Medic. Obs. and Enq. vol. iv. p. 58.

A parallel case to that of Dr. Jeffray occurred within the experience of the late Dr. Chalton of Gloucester, which indeed was in every point the counterpart of Dr. Jeffray's, with the exception that the shell of the ovum in Dr. Chalton's had become so firmly ossified as to require the use of a saw to lay it open. The above cases, the late Dr. Garthshore's case, together with many which may be found recorded in books, go to prove that recovery after the accident of rupture of the uterus, may in some rare instances be expected, without any interposition of manual or instrumental midwifery. From the perusal of the above sketches, and especially those of Dr. Sims and Dr. Jeffray, we may perhaps trace out for ourselves a tolerably good indication for the management of parallel cases, which may occur in our own practice; viz. that we should interfere without loss of time, when the circumstances might appear urgent and desperate, and abstain from such interference, when the nature of the symptoms might promise a probably successful issue without it.

With respect to the use of medicines, we may generally observe, that full doses of opium might almost always be advantageously exhibited, both as a preventive when the accident is threatened, and as a sedative, immediately after it shall have been incurred. When under the circumstances of the latter case the stomach is found to reject every thing that is taken into it, together with the light grey vitiated bile, presenting the appearance of an infusion of powdered sage leaf, which is usually vomited soon after the rupture of the uterus, opiate medicines may be equally conveniently exhibited by the rectum in the form of enemata. If the rectum should be previously charged with feculent matter, it should be relieved by the injection of castor oil, or of any other aperient suitable for such a purpose, before the opiate injections should be administered. It is scarcely necessary to add, that when art interposes for the purpose of withdrawing the child, the placenta should be removed by the way of the vagina. After this is done, the only remaining manual duty would be to reduce, into the abdominal cavity, any portion of intestine which might be found prolapsing into the vagina, or greatly disposed to escape thither through the wound in the uterus: for if it were allowed to remain in that situation, and if we suppose that the uterus might recover tone enough to enable it to contract after the removal of the placenta, it is obvious that it would soon become liable to strangulation.

Of Rupture of the Vagina.—This form of rupture most frequently takes place as an extension of a laceration of the uterus. In a small proportion of cases, however, the rupture is found to implicate the vagina only. Some writers have considered rupture of the vagina as much less fatal than rupture of the uterus; which indeed, when the injury does not communicate with the abdominal cavity, may be really the case. When on the other hand an intercommunication is effected between the vagina and the cavity of the abdomen, the author finds himself obliged to state, on the authority of all the cases for which he has ever been consulted, that the laceration is quite as fatal as similar

injuries of the uterus itself. Ruptures of the vagina communicating with the bladder, without at the same time implicating the abdominal cavity, may be compatible with a considerable chance of ultimate recovery. It should however be recollected that such cases must ever be attended with want of power of retention of the urine. Dr. Merriman has met with two cases of extensive rupture of the vagina produced by a violent and ignorant practice of midwifery. "I have known," observes that very respectable author, "two instances of rupture of the vagina arising from the rashness of midwives who forcibly dragged the children, enormously swelled, into the world. In one of them the vagina was split entirely through. Both the women died in a few hours. Had the abdomen of each child been punctured to give vent to the air, those fatal occurrences might have been avoided." Synopsis, p. 35, Edit. 3.

Of Rupture of the Recto-vaginal Septum.—A solution of continuity of this septum, which was produced by the undexterous use of the forceps, once came under the professional attention of the author. The laceration was one of considerable extent, and furnished an abundant passage for the feculent contents of the rectum into the vagina, through which they effected their escape exclusively, during the first thirty or forty hours after the delivery. The subject of the case was a hale young woman. The damage which she had sustained may be said to have occasioned no disturbance whatever of the general health; as the pulse on the first visit, and the same continued afterwards, could scarcely be said to be in any degree excited. Nothing was advised to be done, with the exception of removing the contents of the rectum, first by a large dose of castor oil given by the mouth, and then by an injection of the same remedy by the rectum. The current of fæces began to be evacuated by its natural passage on the third day after the first visit, and has continued so to be discharged ever since. Solutions of continuity of this septum may arise as a result of contusion consequent on long-continued pressure of the head upon it during severe labours. An interesting case of this kind has already been detailed under the head of diseases of the internal genitals, p. 123.

Of Rupture of the Bladder.—The occurrence of this misfortune during labour should in most cases be imputed to gross mismanagement. It is speedily followed by fatal peritonitis. The late Dr. Squire was consulted for a rupture of the bladder which had been occasioned by an over-distention of it from retroversion of the uterus in the fifth month of gestation. The patient died of peritonitis complicated with sphacelation of the lacerated wound of the bladder. That organ was found greatly thickened after death.

It once happened in the presence of the author that one of his professional friends unluckily carried the point of his perforator into the bladder, the injury to which was instantly followed by the evacuation of its whole contents. The patient however recovered, and, with the exception of the few immediately succeeding days, she has ever since possessed the power of retention. This it should be observed was a case of an incised wound. The author has not at

any time been fortunate enough to see a case of intercommunication between the bladder and vagina occasioned by sloughing from contusion of their common septum, successfully treated. Women sometimes lose their power of retention of urine from a moderate degree of contusion of that tissue, without proceeding all the way to ulceration and loss of substance. There are few practitioners who have not occasionally met with cases of this kind, as consequences of tedious and difficult labours. When an aperture is distinctly felt to exist between the neck of the bladder, or upper part of the urethra and the vagina, the case may be considered hopeless, notwithstanding the confident boasts to the contrary, which we have occasionally seen expressed in our professional journals, published both in this country and abroad. The author has several times witnessed attempts to repair this damage mechanically, as well as by chemical stimuli; but, as already stated, never with success. Medic. Obs. and Enq., vol. iv. p. 58.

Of Rupture of the Labia Pudendi.—Under the head of Diseases of the External Genitals, pp. 45, 46, two cases of rupture of these parts were placed before the reader, who was at the same time referred to many similar histories reported by other practitioners.

This class of ruptures, when communicating with very large branches of the uterine arteries, may terminate fatally, as may be seen abundantly proved in Vols. i. and xiii. of the Recueil Periodique de la Société de Santé for 1797.

Of Rupture of the Perineum.—The rupture of this tissue is most commonly made in the direction of its length, commencing with the fourchette or posterior commissure of the os externum. It sometimes occurs during what may be called the last extremity of natural labour, when the head of the child makes its escape through the outlet of the parturient passage. It then for the most part takes place for want of due proportion between the resisting and the propelling powers, and especially from an obstinate indisposition on the part of the parietes of the passage to dilate, and to become sufficiently developed to give adequate room for the delivery of the fœtal head. It sometimes would appear to occur from an excessive and premature exertion of the expellent action of the uterus, by which the perineal tissue is exposed to destructive pressure, before it has had time to become sufficiently developed. Nature is not often chargeable, although undoubtedly she sometimes is, with the inordinate violence here stated. When the latter stage of labour is tempestuous, the practitioner should be strictly on his guard at the moment when the child's head is about to make its escape through the external orifice of the vagina. This duty, however, has been elsewhere sufficiently urged on the reader's attention. But the perineum is ruptured more frequently by the operations of art than by nature herself, and the rupture in that case may be produced either by the practitioner's hand or by his instruments. Sometimes it has been occasioned by violent attempts to perform the operation of turning. When these lacerations are of moderate extent, nature is found in many cases

to repair the mischief very tolerably by a gradual incarnation from the bottom of the wound, and consequent deposition of new materials to make up for loss sustained by the sloughings of its surface. This action may be conveniently promoted by occasionally touching the surfaces with a mild caustic. When the rupture extends as far as the sphincter of the anus inclusive, an attempt might perhaps be successfully made to connect the opposite surfaces together by ligature. These operations when adroitly performed, so as to leave the parts well adjusted and firmly connected, have been known in some rare cases to succeed; whereas unquestionably with the best care they much more frequently fail, in consequence of the ligatures tearing their way out and leaving the intermediate gap in a worse condition than before. In the management of cases of this description, the lower extremities should be bandaged together at the knees, with a pillow placed between them to prevent painful pressure.

The author has known more than one instance of cohesion of the ruptured surfaces of the sphincter ani, and of recovery of its power of retention of the fæces, after it had been snapped across by the extension of a rupture of the perineum. This result has taken place even without any assistance of art either manual or instrumental.

The child's head has sometimes forced its way through the perineum transversely, leaving its anterior portion, which connects it with the external orifice of the vagina, unruptured. A case of this description occurred a few years ago in the practice of the late Mr. Gaitsgill, of Rotherhithe. Consult also the following references for similar cases: Denman's Midwifery, c. ii. sect. 7. Merriman's Synopsis, Appendix 21, where the author records a very interesting case of transverse rupture of the perineum. See also several very important cases of the same description by M. Sédillot, Journ. Gén. de Méd., vol. lvi. p. 177.

In attempting to repair injuries of the perineum by art, contrivances should be made to prevent the lochial discharge from coming in contact with any part of the wounded surface. One variety of such contrivance might be a smooth wooden tube of about six or seven inches long, introduced into the vagina. It should be of sufficient diameter to admit of being charged with a longish piece of sponge, which on being pretty firmly applied to the distilling orifice of the uterus, might be made to conduct every particle of the lochial secretion beyond the os externum. But any other expedient, that should effectually prevent the wound being touched by the lochial secretion, might often contribute to repair a damage which is seldom benefited by any of the modes of treatment hitherto resorted to for that purpose.

The following references to some of the most important cases of lacerations of the internal genitals during pregnancy and the puerperal state, will interest any reader who may wish to extend and improve his knowledge of the subject by future reading: A case of rupture of the uterus, communicated by M. Thibault, of the Academy of Rouen, treated by gastrotomy, fatal to both mother and child. Journ. de Méd. de Paris, tom. i. p. 368. About fifteen parallel

cases given in page 372 of the same volume. See also an able criticism upon M. Thibault's case by an experienced practitioner, tom. ii. p. 65. A case of recovery after rupture of the uterus, com. by Mr. Hugo of Crediton. Lon. Med. and Phys. Journ., vol. xix. A fatal case of rupture of the uterus in the practice of a midwife, com. by Dr. Ramsbotham. Lond. Med. and Phys. Journ., vol. xxx. A case of rupture of the uterus from the long duration of the labour, com. by Mr. Mayo of Winchester. Death soon followed the accident. Lon. Med. Phys. Journ., vol. iii. p. 444. A fatal case of rupture of the uterus, of which the symptoms of the actual rupture were not strongly marked during the labour; com. by Dr. Ramsbotham, who attended as consulting physician. Lon. Med. and Phys. Journ., vol. xxxii. p. 194. Two fatal cases of ruptured uterus, by J. G. Coffin, M. D.; extracted from the New England Journal. The moment of the accident was in this case not distinctly recognised. A well-described case of rupture of the uterus occasioned by monstrous size of the child's head. The fœtus is stated to have weighed twenty-three pounds, but whether by Austrian or Paris weight is not mentioned, com. by M. Crantz, of Vienna. Journal de Méd. vol. v. p. 458. A case of evacuation of the fœtal skeleton in successive portions by the rectum, considered by its author one of incontestable rupture of the uterus. Journ. de Méd., vol. ix. p. 142. A case of rupture of the uterus in the practice of a French midwife. It occupied the neck and shoulder of the womb anteriorly. The patient died undelivered. Permission to open the body was refused on the ground that the child had already been baptised in utero. Journ. de Méd. etc. etc., tom. xxv. p. 532. A case of rupture of the uterus extending to the vagina, com. by M. Pietsch. Journ. de Méd., tom. xxxiv. p. 187. A case of wrenching away of the unimpregnated uterus, together with a polypous tumour attached to it, by the crotchet, and survival of the patient, com. by M. R. Figuet. Journ. de Méd. etc., tom. xii. p. 40. A case of rupture of the uterus which took place in two hours after rupture of the membranes. It was discovered after death that the parietes of the uterus were remarkably thin at the part ruptured, although every where else unusually thick. The fact of this laceration had not been discovered during the patient's life. Com. by M. Vespre. Journ. de Méd., etc., tom. xlii. p. 84. A case of rupture of the uterus in which the patient survived the accident a month. The arm presented. An ignorant practitioner was first consulted in the case, and endeavoured to remove it from the body by the operation of wrenching. He moreover passed his whole hand into the uterus several times. The patient was eventually delivered by M. Toutant Beauregard. Journ. de Méd. etc., tom. lxxix. p. 68. An important case of accidental wounding and laceration of the uterus. The patient had fallen upon the spikes of a palisade, in consequence of which she received a wound of two inches in extent, immediately below the navel. She passed over the ninth month of her gestation, and even went to the fifteenth month without any inconvenience. At that time a tumour began to form at the part which had been wounded. This tumour opened of its own accord and discharged laudable purulent matter for

forty days, and then dried up and cicatrized. On opening it at a subsequent period, two pints of a very offensive matter was obtained from it, which afforded to the patient very marked relief. On the third day of dressing a small bone presented itself, and from day to day by the same route escaped, until the entire skeleton of a fœtus of between six and seven months' growth was evacuated. Hist. de l'Acad. Roy. des Sc. 1709, p. 23. During a sitting of the Academy about the same time, M. Gregoire made the statement that within twenty years' practice he had met with this accident sixteen times. Hist. de l'Acad. Roy. des Sc. 1724, p. 36. A case of rupture of the uterus which was occasioned by a fall six weeks before parturition. Perfect's Cases in Midwifery, vol. ii. case 78, p. 55. A consultation case of ruptured uterus in the practice of Dr. Ralph Blegborough, in which the cæsarean operation was considered, but rejected. Med. Repos. vol. ii. p. 361. A fatal case of rupture of the uterus, communicated by Dr. Gore Clough. Med. Repos. vol. iii. p. 89. A case of rupture of the neck of the uterus without recession of the child. Delivery was accomplished in a few minutes, but the issue of the case is not stated. Perfect's Cases in Midwifery, vol. ii. case 141, p. 437. A fatal case of rupture of the uterus in the sixth month of pregnancy, com. by Mr. Thomas Holt of Bromley. Med. Repos. vol. vii. p. 375. A case of recovery after rupture of the uterus and removal of part of the child by gastrotomy. By Dr. George Pearson. Med. Repos. vol. viii. p. 110. A case of rupture of the uterus in which gastrotomy was successfully performed. Med. Chir. Journ. vol. iii. p. 108. Hæmorrhage at the seventh month, and the os uteri torn in the delivery followed by recovery. Smellie's Midwifery, vol. iii. col. 33. No. 2. Case 2. p. 91. The case of a woman whose uterus was torn in delivery by the forcible introduction of the hand. Dr. Smellie felt the fissure of the orifice of the uterus take place. The operation was followed by a profuse flooding, which was arrested by a sponge put into apposition with the part, charged with a solution of alum. The patient ultimately recovered. Smellie's Midwifery, vol. iii. col. 33. No. 2. Case 9. An incised wound of the os uteri followed by the death of the patient. A flooding had seized the woman before Dr. Smellie arrived. After having already waited a long time in vain for the dilatation of the orifice of the uterus, he snipped the edge of it, and the part gradually gave way, so much as readily to admit his hand; after which the hæmorrhage was moderate, but the patient died on the fourth day subsequently. Id. vol. iii. col. 35. Case 10. Another case of the orifice of the uterus snipped with a pair of scissors which proved fatal. The practice and the event were precisely parallel with those of the foregoing example. Id. vol. iii. col. 35. Case 16. A case of laceration of the right side of the os uteri with an extension of the wound of three fingers' breadth into the vagina. The child was arrested at the shoulders; it was nevertheless soon after delivered. The child was still-born, but the mother recovered without any bad symptoms. Id. vol. iii. col. 40. Case 7.

A fatal case of rupture of the uterus on account of distortion of the pelvis.

The patient was delivered with the crotchet. Id. vol. iii. col. 40. Case 8. p. 302. Another case of ruptured uterus made the subject of reference by Dr. Smellie. Id. vol. iii. col. 40. case 9. Four cases of rupture of the posterior walling of the vagina, from violent proceedings of female practitioners. One of the patients died immediately, and another in a few days afterwards; while one through whose vagina only a finger, or two fingers at most passed, recovered, together with another who, from being young and of strong constitution, after twenty days' imminent danger from putrid fever, vomitings, etc. also recovered. Chapman's Midwifery, Case 30, p. 199. A fatal case of rupture of the uterus, in consequence of undexterous attempts on the part of the practitioner to effect the delivery by the crotchet. The os uteri and vagina are represented to have been dreadfully mangled. Burton's Midwifery, obs. ii. p. 24. A case of spontaneous rupture of the uterus during severe labour; the child was delivered living, but the mother died in a few hours after the accident. Id. obs. lxx. p. 110. A case of laceration of the vagina of which the result is not given. The midwife is stated to have torn off a part of it, as well as a portion of the bladder of about the size of a crown piece. She had unfortunately mistaken a prolapsion of the vagina for the edge of the placenta, and had torn it away with all her force. Id. obs. xvii. p. 170. A fatal case of labour, the result of an incised wound inflicted on the orifice of the uterus, with the view to promote an adequate development of it; its opposite labia having cohered in consequence of severe treatment which had been employed to effect the former delivery. The patient died in four-and-twenty hours after the injury was inflicted. Edinb. Med. and Surg. Ess. and Obs. vol. iii. p. 291. A case of fatal laceration of the uterus, in consequence of which the patient had for many years been troubled with a descent of the womb. An ignorant surgeon mistaking this prolapsion for a protrusion of some strange body from the uterus, tried to pull it away, by which the womb was torn, and in consequence of which the woman died a few days afterwards. Mauriceau, tom. ii. obs. 109. p. 90. A fatal case of rupture of the uterus, in consequence of the abuse of instruments, by which the whole of one side of the uterus was torn. The patient died an hour afterwards. Id. tom. ii. obs. 147. p. 116. A supposed case of extra-uterine gestation which the patient survived, but becoming pregnant again, she died in consequence of rupture of the uterus. The placenta of the former pregnancy was found within the abdominal cavity. Corvisart's Journal de Médecine, tom. xx. p. 423. Case of recovery after rupture of the uterus, and the escape bodily of the fœtus into the abdominal cavity; after the usual process of decomposition of the fœtus had existed for some time, it was evacuated in successive portions by the rectum. The patient after the lapse of several months recovered her former state of health. Id. tom. xxx. p. 130. A fatal case consequent upon rupture of the uterus, treated by gastrotomy. Recueil Periodique de la Société de Santé, tom. iii. p. 417. A fatal case of rupture of the uterus, com. by M. Ozannan of Milan. Journ. Gén. de Méd. tom. lxi. p. 89. A case of recovery after rupture of the uterus, in which gastrotomy was

successfully performed. Id., tom. lxiv. p. 245. A case of recovery consequent upon gastrotomy successfully performed. The fidelity of this case is questioned by the editor of the journal which publishes it. Journ. Compliment. du Dict. des Sc. Méd., tom. v. p. 189. A fatal case of rupture of the uterus, com. by M. Amussat. Journ. de Med. etc., tom. v. p. 296. A fatal case of rupture of the uterus, which was probably caused by a morbid excrescence growing on the interior surface of the upper part of its cervix. Ephem. Germ. 1671. Leipsic. p. 78. A fatal case of rupture consequent upon a severe labour of three days' continuance, com. by Dr. Andrew Löw. Ephem. Germ. dec. ii. an. 9. 1690. p. 194. A fatal case of rupture of the uterus during a labour of great severity. Disputat. Chirurg., tom. iii. p. 477. See a dissertation on the same subject in p. 489. A fatal case of rupture of the uterus from severity of the labour in a predisponent state of the organ to such an accident. Comment. de Reb. in Sc. Nat. et Méd. Lipsiæ. 1757. vol. vi. p. 77. A fatal case of spontaneous rupture during labour. Idem, vol. xxiii. p. 121. A fatal case of rupture of the uterus from violent treatment during labour. Idem, vol. xxiii. p. 122. A case of fatal rupture of the uterus incurred by a fall during pregnancy. Idem, vol. xxvii. p. 206.

The following are cases of various merit, communicated in essays and public journals of different parts of Europe, principally during the last, part of the preceding, and also of the present centuries. Hist. de la Soc. Roy. de Méd. de Paris, 1779. p. 310. Jones's Abridgment of the Transactions of the Royal Soc. 1720. p. 303. Comment. de utero Rupto in partûs doloribus; auctore H. N. Crantz, Neapoli, 1776. This essay abounds with references to cases of lacerations of the uterus. Varii de arte Obstetric. vol. iii. dissert. 7. Med. and Phil. Comment, vol. v. pl. 3. p. 314. Hamilton's Select Cases in Midwifery. Edin. 1795. p. 138. A commentary on Steidele's five cases of rupture of the uterus. Med. and Phil. Comment. vol. vi. part 2, p. 123. Cases of Dr. Ross, late physician at Hamburgh, Annals of Medicine for 1798, vol. iii. p. 267. Edin. 1799. A communication from Dr. Denman on the same subject, Lond. Med. Rev. vol. iv. p. 97. Lond. 1811. A case communicated by Mad. la Chapelle, tom. i. p. 441. Prat. des Accouchmens. Several of the cases recorded in Mad. la Chapelle's Pratique, appear to the author to have been treated upon very erroneous principles.

The following references are especially illustrative of RUPTURES OF THE APPENDAGES OF THE UTERUS, of the external parts of generation, and of the perineum.

Perfect's Cases of Midwifery, vol. ii. p. 63. Smellie's Midwifery, vol. iii. col. 40, cases 1 to 6, p. 297. Mauriceau, tom. ii. obs. 44, p. 39; obs. 577, p. 477; and Obs. 562, p. 465. Communications from Dr. John Frederick Lobstein. Leroux's Journal de Médecine, tom. xxxv. p. 71. tom. xxxvi. p. 147, and Recueil Periodique, tom. vi. p. 144. 1799.

Memoirs and Observations on the ruptures of the recto-vaginal septum and perineum. Recueil Periodique, etc. vol. iv. p. 416. A valuable example of a cure,

by operation, of an old and complete rupture of the recto-vaginal septum, sphincter ani, and perineum, by M. Noel. Recueil Periodique, tom. vii. p. 187. Researches on ruptures of the fourchette, perineum, sphincter of the anus, and recto-vaginal septum, by M. Sedillot. Journal Génerale de Médecine, tom. lxxi. p. 96. Simmons's Med. Journal. Lond. 1785. vol. vi. p. 92. An account of rupture of the bladder from a suppression of urine during pregnancy, com. by Mr. Hey of Leeds. Med. Obs. and Inq., vol. iv. p. 58. Pratique des Accouchmens, par Mad. la Chapelle, tom. iii. p. 192. Paris, 1825.

Of Labours complicated with Diseased Conditions and Positions of the Uterus, and other anomalies.—The late Dr. Harrison, some years ago Teacher of Pathology at the Medical School of St. George's Hospital, once presented to the author a portion of a carcinomatous uterus, in which had been found, on examination of the subject after death, an ovum of ten or twelve weeks' gestation reposing on a superior part of the interior of the organ, on a tissue comparatively healthy. The portion of the uterus presented to the author was greatly diseased.

A patient of the Northern Dispensary sought the author's assistance, on account of a hæmorrhage from the uterus with which she had been repeatedly visited, although she stated herself to be then advancing towards the seventh month of gestation. A short time previously, the flooding had been very profuse; which made it proper to examine the state of the uterus per vaginam. The vaginal portion of the womb was found greatly enlarged and diseased, but the woman asserted strongly that she had advanced in her pregnancy to the time which she had before stated. At the full period of her gestation the usual phenomena of parturition presented themselves, and she was delivered after a very tedious anddifficult labour of a still-born child. After this event she in some degree rallied from the state of great depression in which her previous gestation and parturition, both extraordinary in their circumstances, had implicated her general health. She survived the puerperal state for a period of about ten weeks.

On inspection of the body after death, the uterus and the vagina, together with their contiguous viscera, were found mutually adherent or otherwise matted together into one enormous mass of cancerous disease.

Labours may be complicated with extraordinary or diseased States of the contents of the uterus; such for instance as, when gravid with twins, one of the ova being healthy and the other diseased, or perhaps even putrified: or there may be an unhealthy condition of the ovum, or of its placenta; or the amnion itself inflamed, thickened, and prodigiously developed, may contain many quarts, or even gallons of liquor amnii; or, finally, the gestation may be rendered complicated, and the birth more difficult and responsible, in consequence of preternatural and monstrous formation of the fœtal subject. Cases of this description, which may not come to be especially considered in our fourth class of labours, must be treated according to their respective indications.

Of Cases of Descents of the Uterus into and beyond the external parts during advanced gestation and parturition.—The reader has already been put in possession of a variety of cases of descents of the uterus in the absence and during the early periods of gestation: but some examples are recorded in books of the same malpositions of the organ during the latter months of pregnancy, and even during parturition. M. Mareschale de Rougere observes of a case which he has reported in the Journal de Médecine etc., tom. xxxvii. p. 556, that upon paying his first visit to a patient in labour, he found presenting at the external orifice of the vagina an enormous mass, which he recognised to be the uterus in a state of incipient mortification. The head of the child within the uterus had totally cleared the orifice of the vagina. The orifice of the womb however was only dilated to the diameter of about an inch and a half, so that two fingers could scarcely be introduced into it. It was much inflamed, as well as in a state of great rigidity. The patient was in a very exhausted condition, in consequence of having already sustained a labour of five days' duration. The orifice of the womb was gradually developed by the forcible introduction of the hand; but in withdrawing the child the cervix was ruptured in two opposite places. The placenta was speedily withdrawn, and then without much difficulty the uterus was reduced. The reporter proceeds to state, that his patient was restored to health in the course of ten or twelve days. A case of procidentia of the gravid uterus complicated with inversion of the vagina at the full period of gestation and even during labour, may be perused in the Journal de Médecine etc., tom. xli. p. 346. Communicated by M. Noe, a pupil of the celebrated Levret. After the reduction of the womb had been effected, the labour proved exceedingly tedious; but when the mouth of the uterus became sufficiently dilated, delivery was accomplished by the forceps, without doing mischief either to the cervix uteri or the perineum. During the operation, an assistant was employed to prevent a return of the prolapsion. The child was still-born, but as the cuticle peeled off upon the slightest touch, it was presumed to have been dead before the commencement of the labour. The mother had sustained a severe fall about eight days previously. A case of prolapsion of the uterus during the whole of gestation, while the patient sustained no other inconvenience than some difficulty in voiding the contents of her bladder, may be found in the Journal de Médecine, tom. xliii. p. 366. The patient had been subject to this malposition ever since she was fifteen years of age. When labour supervened, the surface of the tumour was observed to be studded and otherwise disfigured by indurations, cicatrices, and ulcerations. Reduction was attempted; but could not be fully accomplished. At length several incisions were made through the lower part of the cervix and orifice. A dead child was thus brought away. It is added that the patient finally recovered. See a similar case in Van Sweiten's Commentaries, tom. iv. p. 62. See also Portal's Pratique des Accouchmens, obs. 16, p. 68. Of two cases quoted by Van Sweiten, one was treated by in-

cision, and proved fatal. The mode of treatment of the other is not stated, nor the event. A case of procidentia of the uterus beyond the labia at a late period of gestation treated by reduction. Although during its state of procidentia the orifice was dilated to the size of a shilling piece, nevertheless the action of parturition did not supervene until after the lapse of ten days subsequently, when the patient was happily delivered of a living child, after a short labour. Com. by M. Gireaud, Journal de Médecine, etc., tom. xlv. p. 232. See also a case of extra-ventral gestation in Corvisart's Journal, tom. xx. p. 423.

Of Inversion of the Uterus immediately after labour.—Inversion of the gravid uterus may take place during its last effort in expelling the head or any other presenting part of the child, provided the navel-string should unfortunately be too short. A case probably of that kind once occurred in the practice of Mr. Welch of Chelmsford. That gentleman, after separating and removing the placenta, effected the reduction of the inverted womb without much difficulty. The case is represented to have had for its predisposing cause a violent removal of the placenta on a former occasion. The report of the case is defective by reason of its not noticing the length of the umbilical cord. Med. and Phys. Journ., vol. v. p. 451. A case of inversion of the uterus which was not reduced, and in which inflammation threatening gangrene took place two days after delivery. By the assiduous use of fomentations, suppuration was promoted. After various suffering, the patient ultimately recovered a better state of health than she enjoyed before her pregnancy. Lond. Med. and Phys. Journ., vol. vi. p. 331. The more frequent cause of inversion of the uterus is an unusual brevity of the umbilical cord. That being put on the stretch, by undue or premature traction made by the practitioner during a relaxed state of the uterus, its inversion follows as a matter almost of course. See that point illustrated in a paper com. by Mr. W. Smith, of Brideford. Lond. Med. and Phys. Journ., vol. vi. p. 503. Professor Wrisberg, in his 'Commentatio de uteri mox post partum resectione non lethale,' makes the statement, that the uterus was cut off by a rude, ignorant midwife, who mistook the prolapsus for a preternatural excrescence. The wound was afterwards healed without any assistance of art. The woman was living twenty years afterwards. Comment. etc. Götting. 1787. Inversion of the womb after two successive labours, and successful reduction in both cases. Lond. Med. and Phys. Journ., vol. xi. p. 207. A case of inverted uterus com. by Dr. Merriman, in which it was found too late to effect the reduction, and the patient remained in a state of great misery, and probably doomed in no long time to perish from a serious drain, or some more painful disease which the displacement of so important an organ would appear well calculated to produce. Lond. Med. and Phys. Journ., vol. xxi. p. 63. A case of inversion of the uterus during purturition which was never attempted to be reduced, com. by Dr. Cleghorn of Glasgow. The paper is highly interesting and eloquent, and contains several important references. Med. Obs. and Inq., vol. ii. p. 226.

" Mary Griffiths, a married woman, thirty-seven years of age, residing in the

parish of Guisfield, near Welshpool, was delivered of her first child in the year 1804. The labour was natural and rather quick; she recovered speedily and perfectly after this confinement, and subsequently enjoyed an uninterrupted state of good health, until the period of her second labour, in May 1810. "During that labour she had frequent and very strong pains, which continued more or less severe till the following day, when the child was born; no more difficulty however having occurred than is usual in long and what may be called LABORIOUS labours. Although there was no flooding, nor other bad symptoms; yet, at the end of half an hour, the placenta had not separated. The midwife proceeded to remove it; in doing which she employed so much force that she dragged out the after-birth and uterus together; when the placenta immediately disunited from its attachment, and the uterus remained without the os externum. The poor woman stated, that she repeatedly requested the midwife to desist, as she fancied that she was drawing her inside out; but the midwife persevered in her forcible attempts, till at length the patient being sensible of something very large passing from her, believed herself to be delivered of another child. For some time after this result she knew not what passed, as she fainted away; but on her recovery she found that there had been a profuse flooding, and that there was a large tumour externally. No attempt was made to return it, and she therefore remained in this situation for three weeks, when with the greatest difficulty she walked to Welshpool, a distance of nearly three miles, where she received medical attendance." What was there done for her is not stated; but the exertion of walking brought on a very violent inflammation of the parts, which during the first fortnight was followed by a great sloughing of the coats of the uterus, attended by a very fœtid ichorous discharge. A fortnight after this time, and about five weeks subsequently to the accident, the patient was sent to a workhouse, there, as was supposed, to linger out the short remaining period of her life, rather than with the expectation that any relief could be afforded her. It was found, on examination, that reduction of the tumour was become impracticable; and that extirpation was the only chance left for putting an end to the poor woman's sufferings. That operation was performed as follows:—A flat seton needle was passed through the vagina edgewise, in the direction of its longitudinal fibres, and after dividing the ligature, each half was tied moderately tight, and fearing lest these might slip, another ligature was tied round the whole close above the former. The vagina was then divided with a scalpel immediately below the lower ligatures. By this operation the whole of the uterus, and at least an inch and a half of the vagina, were extirpated. In about nine days the lower ligatures came away, but the upper one remained much longer. The patient in about a fortnight began to improve in her flesh, and in six weeks after the operation she was perfectly recovered." Reported by Mr. R. Barker, Med. Phys. Journ. vol. xxv. p. 210. A case of inversion of the uterus, in which reduction was probably not effected till after the lapse of about an hour. The precise amount of delay is not noticed. The patient

recovered, and some time afterwards conceived again, and was delivered of a living child, at the full period of gestation. Journal de Médecine, tom. ix. p. 436. Another case, similar in its principal circumstances to the foregoing, by M. Martinay, Journal de Médecine, tom. xxiii. p. 267. A case of inversion and excision of the uterus, by Mr. Anselin of Amiens, treated successfully, and followed by recovery about seven weeks after the operation. Journal de Médecine, tom. xxv. p. 458. A great number of cases parallel to the foregoing are referred to in a criticism upon Mr. Anselin's narrative by M. Quequet. See Journal de Médecine, tom. xxvii. p. 479. For analogous cases, see an observation by Ruysch, inserted at the end of the second volume of Palfin's Anatomy; in De la Fay's Cours de Chirurgie, edit. 1765, tom. i.; in Dionis's Cours de Chirurg., p. 309; in De Motte's Traité des Accouchmens, edit. 1765, tom. ii. p. 1256. A case of extirpation of an inverted uterus, followed by perfect recovery. Journal de Médecine, tom. lxvii. p. 201. A case of inversion of the uterus during labour, from imprudent pulling of the umbilical cord by a midwife. The placenta was not even in part detached, therefore there was no hæmorrhage. Mr. Perfect effected the reduction of the inverted organ without difficulty, and without disturbing the adhesion of the placenta, of which, after waiting for four hours for the contraction of the womb, he effected the detachment by a careful separation of it with his hand from the uterine surface. Perfect's Cases in Midwifery, vol. ii. p. 6. A case of fatal inversion of the uterus from a profuse hæmorrhage, which immediately supervened upon the removal of the placenta. Idem, vol. ii. p. 9, case 72. A case of inversion of the uterus treated by reduction, and eventually followed by recovery. A case by Mr. Alexander, Med. Repos., vol. ii. p. 207. An essay on inversion of the uterus, in which is detailed a successful case of extirpation of that organ, by Mr. Newnham, of Farnham, Surrey, Med. Repos., vol. x. p. 302. Soon after this date the author performed the same operation upon a patient who is now living. It was performed in the presence of the late Dr. John Sims. The subject of it was the wife of a gentleman connected officially with Sir Edward Sugden's chambers, from whom an authentication of this statement might be easily obtained. A similar case shortly after occurred in the practice of Mr. Windsor of Manchester. The uterus was separated on the thirteenth day from the application of the ligature. The patient's recovery was speedy and complete. Med. and Surg. Journ., vol. i. p. 618. A fatal case of inversion of the uterus, produced by forcible extraction of the placenta. Giffard's Cases in Midwifery, case 70. Two fatal cases of inversion of the uterus. Smith's Midwifery, vol. iii. col. 44. cases 3 and 4. Inversion of the uterus by a violent extraction of the placenta. The patient died almost immediately in convulsions. Chapman's Midwifery, case 29, p. 197. A case of inversion of the uterus occasioned by violent extraction of the placenta, and followed by hæmorrhage during a period of eight months. The patient died. Mauriceau, tom. ii. obs. 355, p. 294. A case of inversion of the uterus, made the subject of a criminal process. Recueil Periodique de la Société des Méde-

cine de Paris, vol. xl. A remarkably extensive essay upon the subject of the present article by the indefatigable Baudelocque. Id., vol. iv. p. 99. A case of inverted uterus which remained prolapsed in that position for many years, and then became diseased. Extracted from the German of Schmucker, vol. ii. Berlin, 1781. A case of labour where the mother and child were saved by extra-vaginal delivery by means of turning. Perfect's Midwifery, vol. ii. p. 51. Another labour similarly complicated, in which the birth of a living child was effected, in the language of its reporter, " sine conamine dolorifico." Ephem. Germ. Dec. an. i. p. 188. Another case of procidentia of the gravid uterus, at the full period, in the practice of Dr. Chatard of Baltimore. It was by him treated successfully by delivery with the forceps. New York. Med. Rep., vol. x. p. 39. In the first volume of the same work is recorded Dr. Archer's celebrated case, which was treated by making three incisions through the substance of the neck of the womb. The patient is represented to have recovered as after a common labour. An interesting case of the same description may be found recorded in Baudelocque's Midwifery; Heath's Translation, vol. ii. p. 107.

Assuming the general correctness of the representations made in the average of the above cases, and of many more which might have been collected on the same subjects, the author might perhaps be permitted to offer the following remarks in the form of inferences.

1. Prolapsion and procidentia of the gravid uterus may take place at very advanced stages, and even at the full period of gestation:—

2. The action of parturition has supervened under the actual condition of the gravid womb here alluded to.

3. In some cases the gravid uterus, when prolapsed beyond the external orifice, has been safely reduced into the abdominal cavity and subsequently retained its ovum. It has then naturally and at its full period become the subject of the parturient function.

4. In other cases the ovum has been withdrawn by artificial means; as by the operation of turning, by the forceps, and by dividing the orifice and part of the neck of the uterus with cutting instruments.

5. In a small proportion of cases, when the pregnant uterus has been found prolapsed beyond the os externum, different parts of its surface have exhibited appearances of inflammation, suppuration, inequalities from cicatrization, and other diseased conditions.

6. When reduction of the gravid uterus at an advanced period of gestation can be moderately, easily, or even perfectly safely effected, it should be preferred to every other mode of treatment, as it would obviously replace the uterus in its natural position, where of course it is to be expected it would most conveniently and prosperously execute the great function which it will have ultimately to perform.

7. Cutting operations, which in many cases have ended fatally, should always

be avoided, excepting under extreme forms of impediments within the cervix, or of obliteration of the orifice of the uterus.

8. After the failure of the treatment by simple reduction, and the delivery becoming a peremptory indication, the practitioner would generally find it his safest course to effect that object by reducing the bulk of the fœtal head. It would even be preferable to reduce the bulk of every part and limb of the fœtus, than to notch or make incisions into the orifice and cervix of the mother's uterus.

9. After the extraction of the child and removal of the placenta shall have been effected, reduction of the womb would be found of easy accomplishment. Any phlogosis of the prolapsed uterus should however be subdued, if practicable by the use of fomentations and the abstraction of blood by leeches from the inflamed surfaces, before any attempts should be made to replace it. Great caution might be required in order to come to a right judgment with respect to the application of leeches to the uterus under such circumstances.

Inversion of the uterus in a state of great development may be the result of traction applied to its interior surface, either in consequence of attachments of diseased contents, or as a result of too much pulling of the umbilical cord in removing the placenta. Deficient length of the umbilical cord may indeed be considered as furnishing both a predisponent and occasional cause of the accident. Cases have been known of the umbilical cord not exceeding two inches in length. Under such circumstances what is so likely to happen as inversion of the uterus, complicated most probably with a profuse discharge of blood ? The only treatment which could meet the exigency of a case of that kind, would be the separation of the placenta, and immediate reduction of the inverted womb.

2. Under the circumstances now supposed, the death of the subject has often taken place in less than half an hour after the accident. Hence the expediency of admitting of no delay in the use of preventive measures.

3. The nature and even the fact of the accident have often not been discovered till after the lapse of many days, weeks, or months subsequently ; and in a smaller proportion of cases, not till after the death of the subject.

4. Some women who become the subjects of inversion of the womb, not only survive its displacement for many years, but also escape in a surprising degree its ordinary consequences.

5. More frequently this displacement of the womb, when not speedily fatal, is attended by exhausting hæmorrhages, both periodical and occasional, as well as by other forms of morbid profluvia.

6. The uterus has been removed by ligature, both with and without the addition of excision below the ligature. But this subject has already been sufficiently discussed. From the results of the cases he has himself seen, the author feels quite prepared to recommend strongly the extirpation of the inverted womb, in all cases where the health is found to sustain much injury from the

previous malposition. The operation is best performed by passing a double ligature through the centre of the inverted neck, and including within each loop its own moiety of the entire substance to be strangulated. If previously within the cavity of the pelvis, the inverted womb should be brought down so as to appear beyond the labia. In this situation it is manifest that great advantage must be secured, for the easy and effective application of the ligature, as well as for the subsequent excision of the part below the ligature.

LABOURS COMPLICATED WITH HERNIA will require the exercise of great vigilance on the part of the medical attendant. They are very apt to be further complicated with hæmorrhage after delivery; for the treatment of which the practitioner should be well prepared. Among the precautions to be adopted in such cases, the abdomen, even before the expulsion of the child, should be somewhat firmly bound round with a broad bandage, so applied as to admit of being gradually more and more tightened, after the delivery shall have been completed.

Instances have occurred of PROTRUSIONS OF PARTS OF THE OMENTUM, together with portions of the intestines. Such cases might lead to serious results, and should have the benefit of the most adroit management, as well as of the intelligence of the most competent consultations. See Appendix to Mr. White's Treatise on the Management of Pregnant Women, p. 52. See also Baudelocque's Midwifery, vol. ii. p. 110; Heath's Translation. The author has already referred, p. 914, to a hernial malposition of the gravid and parturient uterus as recorded in the Transactions of the Roy. Soc. of Copenhagen, Nouv. Journ. de Méd. tom. v. p. 193.

A case of ventral hernia which manifested itself when the subject of it had gone five months in her gestation, treated by the application of adhesive plaster and a broad girdle with four buckles to it. This mechanism answered every end of pressure; and the patient was delivered at the full period of her pregnancy without accident. She has since borne two other children, always observing to wear her bandage tighter when she was not with child, and relaxing it in proportion to her increasing size when she was. Perfect's Cases in Midwifery, vol. ii. p. 38. A case of exomphalos which proved fatal soon after delivery. The body was not inspected after death; but the author conjectured strangulation to have been the cause of it. The patient could not bear the pressure of a girdle as in the former case. Id., vol. ii. p. 41. A case of inguinal hernia during pregnancy which proved intolerant of the use of a truss as the pregnancy advanced. The intestinal pouch prolapsed below the labia, and produced symptoms of considerable local irritation, which were subdued by small bleedings and fomentations. At the full period the patient was delivered of a living child. The hernia was supported by the hand of an assistant during each pain. Id., vol. ii. p. 44. A case of ventral hernia in a puerperal subject. The pelvis was not so small as to render impossible the birth of a living child at the full period of gestation. Id., vol. ii. p. 47. A patient was

much afflicted with an inguinal hernia during the whole time of utero-gestation. Although she could reduce it, the protrusion was forced down during every pain, and gave her great uneasiness. The labour being pretty far advanced when Dr. Smellie arrived, he effected a reduction of the hernial pouch without loss of time; after which he made the patient lie on her left side, with the thigh close up to the abdomen, which prevented the anguish which had retarded the labour. The patient was safely delivered, and a truss was prescribed, by which the disorder was palliated. Smellie's Midwifery, col. ii. no. 2, case 2. A case of perineal hernia, which "continued down all the time of her first labour, upon which an inflammation and strangulation of the intestine ensued, so that it could not be reduced as usual. But as she had a large discharge of blood after delivery, and the parts were fomented with discutient fomentations, reinforced with warm and emollient cataplasms, the stricture was overcome and the hernia reduced. In the patient's next labour, the intestine was forced down by the pains, which had also pushed down the membranes with the waters, and considerably opened the os internum. The hernia however was reduced by opening the os externum, introducing the hand into the vagina, and pushing the intestine above the os sacrum." Id., col. ii. no. 2, case 4. See a case entitled Procidentia ani et hernia umbilicalis in puerpera. Both displacements are stated to have been the immediate results of parturition. The reporter adds a scholium, in which he refers to a case of procidentia of the rectum etc. of a yard in length. Ephem. Germ. dec. ii. p. 280. Norimb. 1682.

In very severe labours, examples are sometimes met with of the process of parturition being complicated with EMPHYSEMA, in consequence of the mechanical injury sustained by the cellular structure of the lungs. Bleeding in ample quantities should be resorted to during the intensity of the labour, and the case in other respects should be treated according to the indications of its several symptoms. Edinb. Med. and Surg. Journ., vol. vii. p. 174.

Another form of complication, which is sometimes although not very frequently produced by violent exertions during the process of parturition, is a spontaneous elongation or other form of enlargement of the anterior lip of the uterus, which has been occasionally known to prolapse beyond the external orifice to some distance, and for many hours before the final expulsion of the head. The best treatment to be adopted for the relief of such cases is ample general bleeding; and in the worst forms, the application of leeches to the tumefied parts. The labour in other respects should be treated on ordinary principles. Cases of spontaneous elongation of the anterior labium of the uterus during parturition, by Professor Duclos of Thoulouse. Bulletin de la Faculté de Méd. de Paris. 1818. No. 9.

The author has yet to notice a complication of which he has seen only one example, viz. that of prolapsion of the rectum during parturition. The subject was a patient of a lying-in institution, the services of which are especially confined to the western parts of the metropolis. The case had been long

neglected by the practitioner whose duty it was to assist and relieve it. When the present reporter of it was first consulted, the whole of the rectum, with part of the colon, was found in large coils thrown irregularly on the patient's bed, and attaching to her person. Its mucous surfaces were strongly injected with red blood; which gave it the appearance of being incipiently inflamed. It was greatly distended with gas. The extrusion of the intestine had taken place at the same moment with the birth of the child; and it had remained for several hours in the same state in which the author found it. After examining into the conditions respectively of the uterus and the vagina, its reduction was attempted and finally effected in the presence of Mr. Tucker of London-street, Fitzroy-square; who was called first to the case, on account of the patient's extremity in the absence of the salaried officer, whose proper duty it was to give his professional attendance. After the reduction was effected, directions were left for ample bleeding, and for the exhibition of a full dose of opium. For parallel cases, see Burton's Midwifery, obs. 16, p. 169; and Smellie's Midwifery, collect. xliv. cases 5 and 6.

# CHAPTER XVI.

## CLASS IV.—OF INSTRUMENTAL LABOURS.

The process of child-birth being ordinarily a natural and a healthy function, it rarely requires or can be benefited by the aid of artificial powers. To this established law, however, there are occasional exceptions: inasmuch as the function of parturition, like all other vital actions, is liable to morbid influences, and perhaps, more than any other, to mechanical obstructions and impediments. To assist nature in overcoming the difficulties which are thus casually opposed to her, is properly the province of instrumental midwifery. When this object is attained compatibly with the preservation both of the mother and her offspring, and without inflicting a serious injury on either, then indeed is the triumph of our art complete. But the difficulties of some unfortunate cases are so great and of such a nature, as to compel us, in our treatment of them, to restrain our hopes of success within narrower limits; and to direct our principal, or possibly our exclusive efforts, to save one life; and of course preferably, if practicable, the more valuable life of the mother. Hence obstetric instruments have usually been distributed into two principal classes: the first consisting of two or three varieties of power, possessing in common the competency of being used compatibly with the preservation both of the mother and her offspring; and the second, including all cutting instruments, and such as may be required to be used as auxiliary to cutting instruments; and therefore necessarily implicating either the certain destruction of life, as in embryotomy, or much risk of it, as in the case of the Cæsarean section.

### OF OBSTETRIC INSTRUMENTS OF THE FIRST CLASS, CONSISTING OF THE FORCEPS, LEVER OR VECTIS, BLUNT HOOK, AND A STILETTE, OR AN INSTRUMENT FOR RUPTURING THE FŒTAL MEMBRANES.

Of the Modern Obstetric Forceps.—The first notice of a pair of forceps without teeth, and called by its author "FORCIPEM QUA DENTES ERUUNTUR," was given to the profession in a work published in the year 1554, concerning Human Conception and Generation, by Jac. Rueffe, at Zurich. The suggestion for the modification here proposed of the teeth forceps then in use, as a means of presumed possibility of delivering living children, "ut si possibile sit, id quod protra-

hendum est educat feliciter," remained however a dead letter for more than a century; and is little if at all entitled to the merit claimed for it by several German writers, of having been the parent principle of the modern obstetric forceps. The author on the other hand feels disposed, in common with most of his countrymen, to attribute the honour of having actually invented that instrument, as consisting of two separable and distinct counterparts, the one capable of being introduced into the pelvis without and before the other, to the celebrated Dr. Chamberlin of London. The essential property, by which the instrument of the Chamberlins was distinguished from all other forceps of previous date, was its resolvableness at pleasure, and for a specific purpose, into two separate counterparts. It does not appear to the author probable that any instrument of the forceps kind, devoid of this property, could be made available to the purpose pretended to have been indicated by Rueffe, that "OF EDUCTING, COMPATIBLY WITH THE PRESERVATION OF LIFE, ID QUOD PROTRAHENDUM ERAT." The instrument of the Chamberlins POSSESSED, AND WAS THE FIRST THAT REALLY DID POSSESS, THIS PROPERTY; which, in addition to the fact that the English family of that name were actually proprietors of such an instrument many years before the date of Palfyn's claim, is now established upon the most irrefragable evidence. In a short but important communication, made by H. H. Cansardine, Esq. to the Medico-Chirurgical Society, which was read at its meeting of the 17th of May 1818, and afterwards published in the ninth volume of its Transactions, we have the following most interesting and decisive statement.

"In depositing the obstetric instruments of the Chamberlins among the archives of the Medico-Chirurgical Society, I beg to offer a few facts and observations which may serve to authenticate their genuineness and their originality.

"The estate of Woodham Mortimer Hall, near Maldon, in Essex, was purchased by Dr. Peter Chamberlin, some time previous to 1683, and continued in his family till about 1715, when it was sold by Hope Chamberlin to Mr. William Alexander, wine merchant, who bequeathed it to the Wine Cooper's Company. The principal entrance to the mansion is through a porch, the masonry of which being carried up with the building, serves as closets to its respective stories. Two or three years ago a lady, with whom I am intimately acquainted, and from whom I had the particulars, discovered in the floor of the upper closet a hinge; and tracing the line, she saw another; which led to the obvious conclusion of a door; and this door she soon found means to open. There was a considerable space between the floor and the ceiling below, in which were contained divers empty boxes etc. Among these there was a curious chest or cabinet, in which was deposited a collection of old coins, trinkets, gloves, fans, spectacles, etc. with many letters from Dr. Chamberlin to different members of his family, and also these obstetric instruments. Being on terms of intimacy with the family resident at Woodham Mortimer Hall, the instruments have

been presented to me; and I have now the satisfaction of depositing them with your Society, for the gratification of public curiosity, and to secure to Chamberlin the meed of posthumous fame due to him for his most useful discovery.

"With respect to these instruments, I would briefly observe, that they appear to me to contain within THEMSELVES the most direct and conclusive evidence of originality of invention; and that even the progress of this invention may be distinctly traced in its different stages through the mind of the inventor. First, we have a simple vectis, with an open fenestra, supposed to be of much more recent invention. Then we have the idea of uniting two of these instruments by a joint; which makes each blade serve as a fulcrum to the other, instead of making a fulcrum of the soft parts of the mother; and which also unites a power of drawing the head forward. This idea is at first accomplished by a pivot, which being RIVETTED, makes the instrument totally incapable of application! Then he goes to work again, and having made a hitch in each vectis for the joint, he fixes a pivot in one only, which projecting, is to be received into a corresponding hole in the other blade, after having been applied SEPARATELY. It may be observed, that although there is a worm to the projecting part of the pivot, yet there is no corresponding female screw in the hole which is to receive it. Every practical accoucheur will know that it is not easy, nor always possible, to lock the joint of the forceps with such accuracy as to bring these pivot and hole into mutual contact. This Chamberlin soon discovered; and NEXT produced a more light and manageable instrument, which, instead of uniting by a pivot, he passes a TAPE through the two holes, and winds it round the joint; which method combines sufficient accuracy of contact, security, and mobility.

"From the roughness of the workmanship, I am led to conclude that Chamberlin was his own artificer: a practice, I am told, not uncommon in those days, when mystery and empiricism were not regarded as contemptible, even among the enlightened professors of science."

"H. H. CANSARDINE.

"London, February 6, 1818."

Notwithstanding the extraordinary caution of the family of the Chamberlins, not to injure the interests of their monopoly by a liberal disclosure of their secret, see the preface of Dr. Hugh Chamberlin to his translation of the first volume of Mauriceau's Traité des Maladies des Femmes grosses et de celles qui sont accouchées, it seems upon the whole probable, that some one or more of their contemporaries got an intimation of its principle. In a work entitled The Female Physician, published in 1724, Dr. John Mowbray, p. 276, reprobates the use of an instrument called by him an Eductor, professed to be used by certain masters of the art in his time, for delivering living children.

Dr. Hugh Chamberlin, and a Mr. Drinkwater, a surgeon, who practised

midwifery at Brentford, were contemporary practitioners, during at least five-and-twenty years of their respective lives. That Mr. Drinkwater was one of the masters of the art who possessed the dangerous arcanum of Mowbray, may be presumed from the known fact, that a pair of forceps were found amongst his effects at his decease. "I have a pair of forceps," observes Dr. Robert Wallace Johnson, in his system of Midwifery, p. 170, "which did belong to Mr. Drinkwater, late surgeon and man-widwife at Brentford, who began practice in 1668, and died in 1728. The size and form of this pair agree with those of Chapman and Giffard." It is well known that Giffard made use of his instrument, which he called EXTRACTOR, and was actually a pair of forceps, of which he made use, sometimes using one blade, sometimes both, during several of the latter years of his life. His "Cases in Midwifery" were published after his death by his surviving friend, Dr. Hody, in 1733.

Palfyn, of Ghent, published the first account of his forceps in 1722. But whether he derived a knowledge of its principle from London or Amsterdam, both of which places he had more than once visited before the date of his publication, on purpose as has been said to find out this secret; see Dr. Friedrich Benjamin Osiander's Lehrbuch der Entbindungskunst, erster Theil Göttingen, 1799, s. 224; or whether he was really AN INVENTOR, although now unquestionably proved NOT THE ORIGINAL INVENTOR of the forceps, must probably remain for ever undetermined. At all events, he is entitled to full credit for the liberal and honourable policy which induced him to publish his secret to the world.

The forceps of this period, of which there were at most but few specimens, were heavy and clumsy instruments; and certainly but ill adapted to their proper and essentially gentle purposes. About the time however to which we have to refer the date of these facts, the practice of midwifery was passing rapidly from the immemorial occupancy of the midwives to that of educated surgeons; and thus important opportunities were furnished to the latter for studying the mechanism of natural birth, and for ascertaining with more accuracy than had been done by their predecessors, the facts and causes of its occasional difficulties. Among the principal results of these opportunities, were the improvements which were made in the construction of the obstetric forceps, by the then most distinguished practitioners of Europe; especially by M. Levret in France, and Dr. Smellie in England. The new curve, or that in the direction of the edges of the blades, was given to this instrument by the celebrated Levret, for which, in common with many other improvements, our profession is under important obligations.

Levret's instrument was made lighter, shorter, and much more commodious, by the late Dr. Smellie; who was the first practitioner in England who bestowed much attention upon the mechanics of the art of midwifery. Dr. Smellie was, in a great measure, a self-taught artist. He left, however, the impress of a happy and various genius on all his excellent and substantially useful works.

The forceps of Levret and Smellie, sometimes one of these, sometimes both, have served as the bases of almost all the changes and modifications which have taken place in the structure of that instrument since their time; and it may be considered as no little compliment to the talents of these eminent individuals, that the productions of their respective countrymen, on the same subject, have usually borne strong family likenesses, which indeed may have now and then been rather flattering to their parent prototypes. It appears to the author, however, that the occasional attempts which have been made in each country to improve on the models of Levret and Smellie have generally not been remarkably successful. As an apology for this want of success, we may perhaps observe, that the proper mechanics of midwifery have not been made the subject of much study since the time of the above distinguished masters; and that we are more indebted for partial changes and small improvements which have been made upon the English and French forceps, during the last half century, to a few brief efforts of attention which some ingenious men have paid to certain detached parts of the mechanism of these instruments, than to any extended and comprehensive views of the objects to be effected by them. The following analytical sketch will enable the reader to appreciate the merits respectively of a few of the more successful pretensions of this kind which have been presented to us; and perhaps also dispose him to receive with favour, or at least without prejudice, the present attempt to enlarge the powers, and to advance the utility, of this very important department of obstetric science.

### OF THE FRENCH OBSTETRIC FORCEPS.

In the common French forceps, we have a combination of the following properties: a prodigious power; a curve in the direction of the edges of the blades; the blades themselves nine inches and a quarter in length, one inch and seven-eighths broad at the broadest part, one-fifth of an inch thick; somewhat hollowed out and fenestrated; handles of steel of great strength, and bluntly hooked at their extremities; and a pivot and mortise lock not difficult to adjust. The entire instrument, the one for example now generally used by M. Capuron, measures eighteen inches and a quarter in length, and weighs two pounds and one ounce avoirdupois. The counterparts of the instrument being duly adjusted, and the ends of the handles brought into mutual contact, the intermediate space between the most opposite parts of the blades, at the convex edges, is two inches and three-quarters, and that between the corresponding parts of the concave edges two inches and a quarter.

The author's objections, which he trusts are not in any degree national, to the French forceps now described, are principally the following:

The blades being so narrow, and of a form not calculated to embrace the child's head by many points of contact, can have but an inadequate purchase of their object, notwithstanding the great thickness of the blades, and their general

bulk and weight of metal. We accordingly find most French authors representing their forceps as liable to slip, and laying down rules and cautions for the prevention of that accident. But that the slipping of a pair of forceps, of any kind, over a fœtal head rather more than proportionally bulky relatively to the dimensions of the pelvis, can scarcely fail to expose the soft parts of the mother to very serious mischief. On the other hand, if that accident is to be prevented, as directed by the partisans of the French forceps, by compressing the head with a force proportioned to the difficulty and tediousness of the operation, it must inevitably follow that the child's life would be exposed to proportionally greater danger.

The narrowness of the blades of the French forceps is such, that no portion of the fœtal head can engage within their fenestræ. However obvious this fact may appear on inspection, and especially upon the application of the instrument to the fœtal skeleton head, we nevertheless seldom meet with a French writer who does not presume upon and maintain, that the fact is directly the reverse of what is here stated. Again, when it is considered that each blade of the instrument is at least one-fifth of an inch in thickness, and that both together therefore must form an addition to the lateral diameter of the fœtal head of two-fifths of an inch, it would seem questionable, whether in cases of difficult births arising from a deficiency of space within the pelvis, such an instrument could be used with any reasonable prospect of advantage.

With respect to the immense weight of metal of this instrument, that fact can scarcely be urged as an objection to it, excepting in connexion with the dangerous property already noticed, viz., the extravagant thickness of its blades. Its power is no doubt extremely disproportionate to the very gentle and limited force required, or even permitted to be used in proper forceps cases; but still the author is not prepared to say, that a careful and dexterous practitioner may not be competent to use it in certain cases requiring this kind of artificial assistance, with PERFECT SAFETY.

Again, the old curve of the French forceps, viz., that of which the concave surface is intended to correspond with the convex surface of the fœtal head, is a section of much too large a circle to admit of any considerable extent of mutual apposition between the convex lateral surfaces of the head, and the concave surfaces of the blades of the instrument. The curve in question is that of a section of a circle, of which the radius is fifteen inches; whereas the average curve of the fœtal head along its lateral convexity, i. e. along the tract of which the central line subtends its longest or occipito-mental diameter, is a section of a circle of which the radius does not exceed ten inches. Hence it happens that when this instrument is adjusted, or rather attempted to be adjusted, to a fœtal head of standard dimensions, the lateral diameter from one parietal protuberance to its opposite being supposed to be equal to three inches and a half, the points of the blades cannot be made to approach within a nearer distance of each other than two inches and three-eighths: nor can any portions

of the blades come in contact with any part of the fœtal head, or side-face, anterior to the ears.

Now, what must be the inevitable consequence of so prodigious a want of correspondence between the instrument and its object? It is obvious, that in order to avoid the accident of slipping, so constantly the object of apprehension in French practice, a small part of the head, not exceeding in any direction an inch and a half of surface, must be exposed to a tremendous pressure; and yet without affording to the operator half the power of purchase which, with a better-constructed instrument, he would be able to command.

The author does not particularly object to the mode of locking the forceps usually adopted by the French. Made on the principle of the pivot and mortise of the simplest kind and with considerable play, as of late years we find practised, the French lock is indeed a piece of mechanism which, in hands not very undexterous, must admit both of easy and steady adjustment. But still, if it was worth while to dispute a point of no great importance either way, the author must express his preference of the English mode of locking, both as being more simple and more ingenious. On the other hand, the locality of the French lock, which is a principle of much more consequence in practice, is decidedly preferable to that of the English.

### OF A FEW OF THE PRINCIPAL VARIETIES OF THE COMMON ENGLISH FORCEPS.

The common forceps of this country, as improved by Smellie and, with some modifications, adopted by almost all his successors among British practitioners since his time, are, in the author's opinion, in several essential points, decidedly superior to the French forceps. Their size and weight are more accordant with the proper intention of the instrument; that of assisting a natural function, without at the same time inflicting a positive injury either upon mother or child. The average length of the London forceps, including the several varieties of Smellie, Denman, Osborn, and Haighton, is about eleven inches and a half to twelve inches; and their weight, with some variations, averages between ten ounces and three quarters, and thirteen ounces and a half, avoirdupois: their difference of weight mainly depending upon the different length of their shanks, by which are meant the parts intermediate between the lock and the fenestræ. The narrowness of the blades is as much an objection to the majority of English forceps as it is to the French; as in all of them, with the exception of Dr. Haighton's, the fenestræ are much too small to receive the parietal protuberances of the child's head. The adoption of Levret's curve in the direction of the edges of the blades, as in those of Osborn and Johnson, is an obvious improvement upon the single curved forceps of Smellie.

The English method of locking, which is effected by means of a deep groove or mortise of a peculiar kind, open at one end on the corresponding sides of either blade, and placed at the handle-ends of the shanks, whereby the coun-

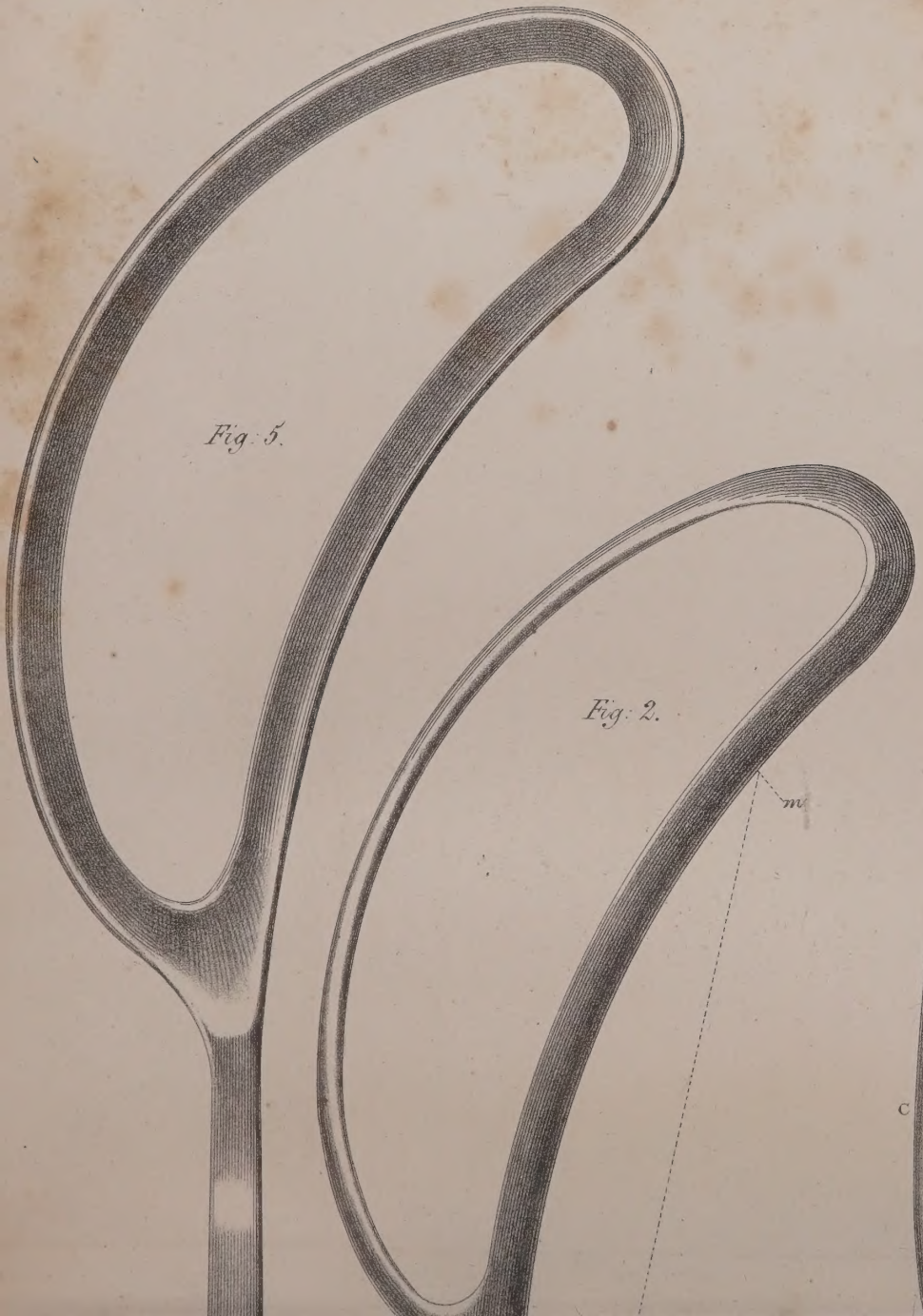

Fig. 5.




Fig. 2.

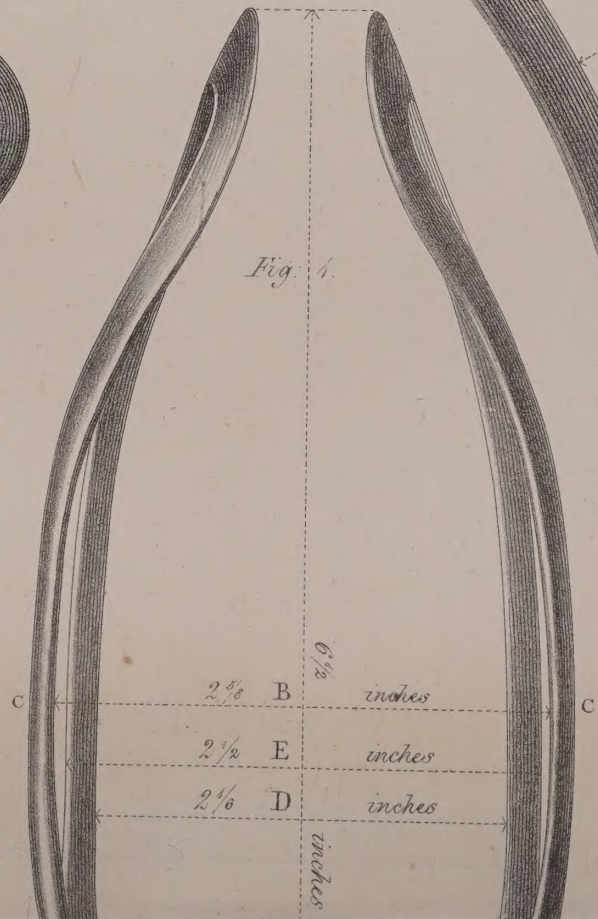


Fig. 1.

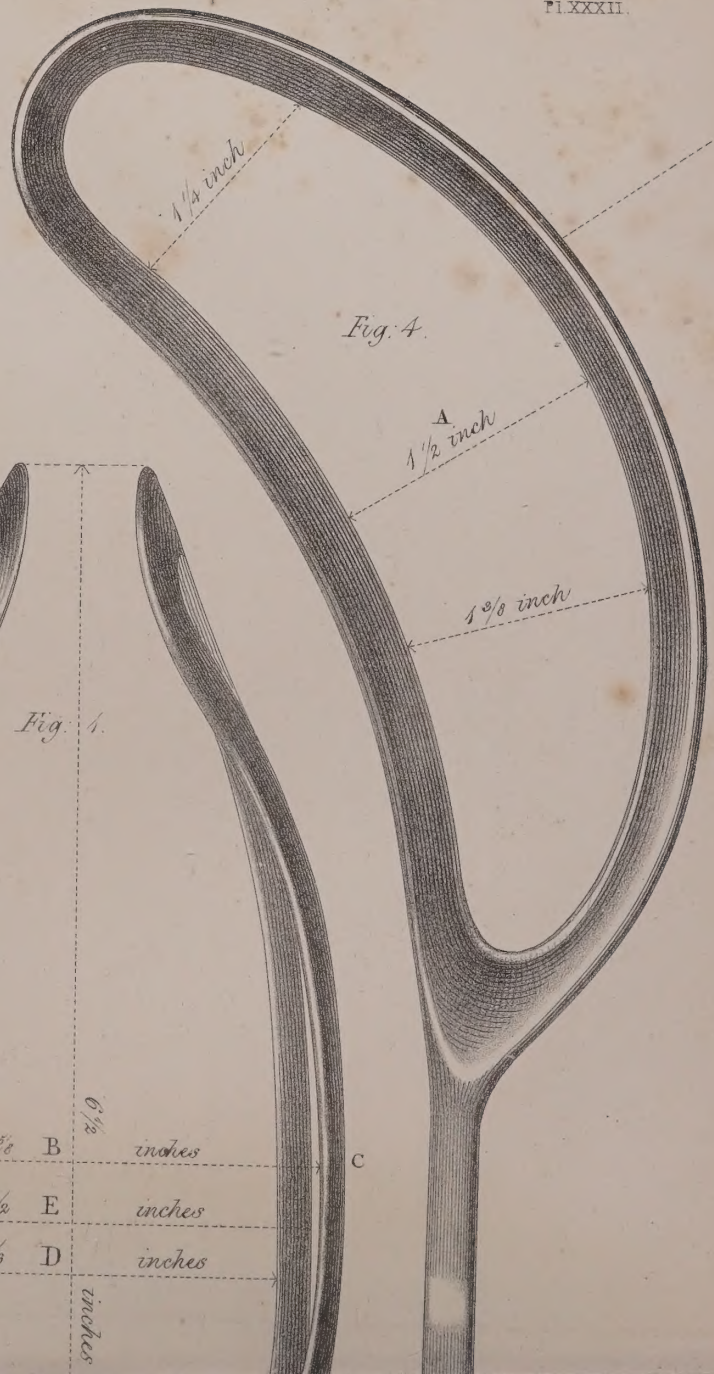


Fig. 4.

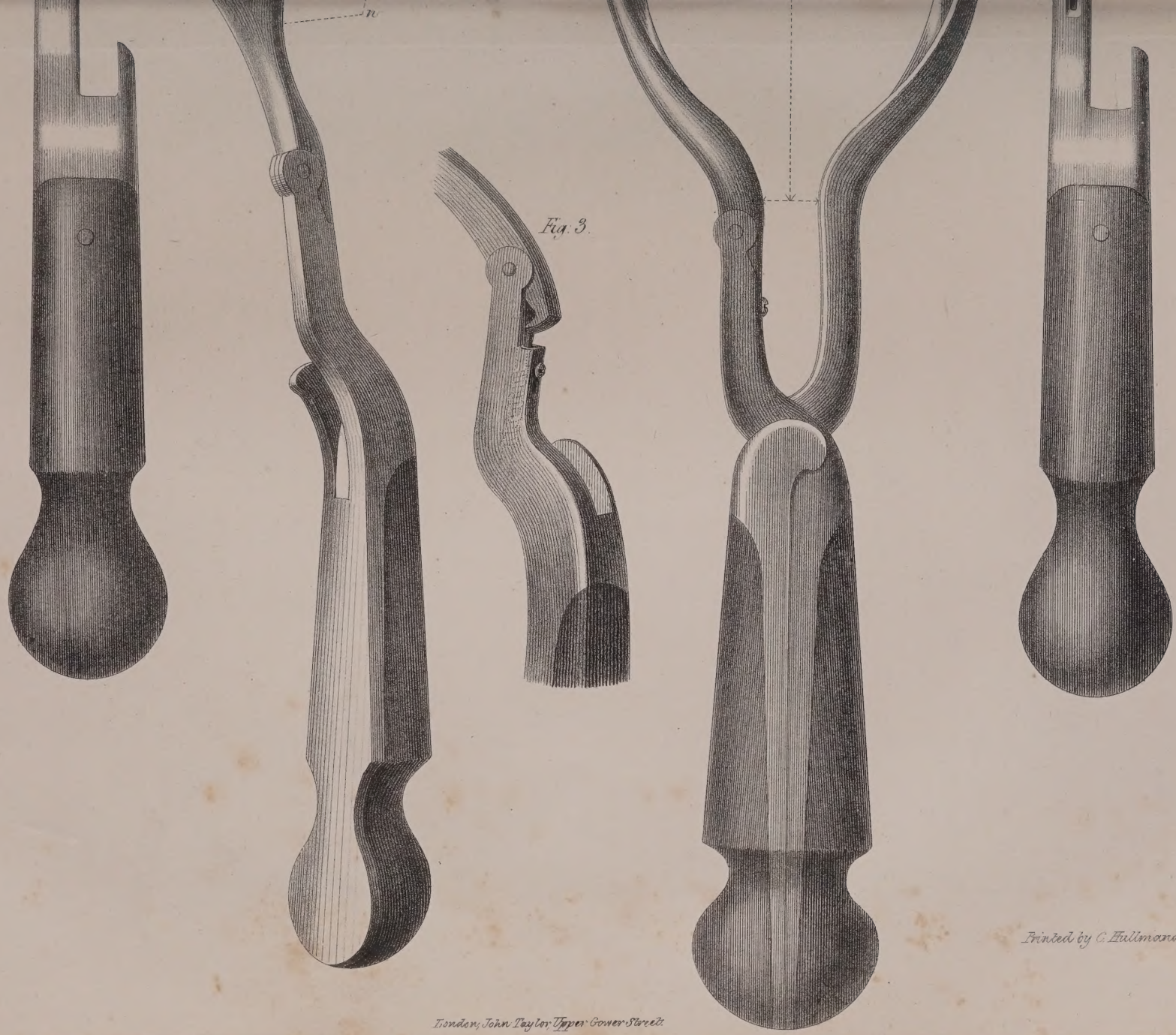


Fig. 3.

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terparts of the instrument being there crossed, each is received into the mortise of the other, is justly considered by almost all British practitioners, as a simpler and an easier mode of effecting that object than any other that has hitherto been proposed. Whilst thus decidedly approving of the principle of the English lock, he nevertheless has to object, which he feels it his duty to do with some earnestness, to its usual locality; the practical inconvenience of which having been as he is disposed to think the main reason why the principle itself has been so generally rejected by foreigners.

In a majority of cases requiring the use of this class of mechanical powers, the locking of the small English forceps takes place immediately at the outlet of the vagina, where the important tissues there situated, being more or less disturbed and distended by the movements of the instruments, are much exposed to contusion and entanglement, during either a careless or a difficult adjustment of the lock. From what the author has himself known and seen of the extreme caution required to prevent the occurrence of these accidents, and of the tendency of the least injury so sustained to be propagated to some distance upwards along the perinæum, during the exit of the most bulky part of the head, he feels very confident that this bad property of our short forceps, viz. the objectionable position of its lock, is a most pregnant cause of misadventure in practice, and of discredit to the art in this department of English obstetrics.

After much consideration of the evils and objects of obstetric instruments of this class, he has now therefore to request his reader's attention to a brief description of a pair of forceps, modified by certain changes and accompaniments, and specially adapted to peculiar varieties of cases, which he trusts will be found to unite more of the desirable properties which should belong to such powers, and fewer of their objectionable qualities, than any other specimen that has hitherto been offered to the profession.

### A DESCRIPTION OF THE AUTHOR'S COMMON FORCEPS.

The instrument now to be described, while it presents perhaps the features of a more decided family resemblance to the common English forceps, will nevertheless be found to embrace some of the better properties of those of France and Germany. The length of this entire instrument is between eleven inches and a half and twelve inches and a half, English measure; this difference being made to depend on the discretion of the possessor as to the length of the handles. The length of the blades, from the commencement of their separation at their shanks, marked by a short transverse line, plate XXXII. fig. 1, to their respective points, the line of measure being taken between and equidistantly from each, is about six inches and a half, or six inches and five-eighths. The length of their shanks, from the commencement of their separation at the line already mentioned to their point of crossing each other at the lock, is one inch and three-eighths; and

the length of the handles, including the lock, is about four inches and a half, something more or less, at the owner's discretion.

The weight of a well-made pair of forceps of this construction should not exceed thirteen ounces and a half; the excess over the weight respectively of those of Denman and Osborn depending upon the greater length and strength of the shanks. It will be observed, that the blades are much broader than those of any other English forceps, with the exception of Haighton's; and as far as the author knows, than those of any foreign specimens without exception. Without, however, the amount of width here given to the fenestræ, viz. an inch and five-eighths at their widest part, see pl. xxxii. fig. 1, dotted line marked c c, they will not be competent to receive any useful portion of the fœtal head within their frames, notwithstanding the assertions so universally made by authors to the contrary. Let any gentleman apply Denman's or Osborn's forceps to regularly-formed fœtal heads, or to skeleton heads, and he will be immediately convinced of the correctness of this statement. The blades of this instrument are not only broad and fenestrated like Haighton's; but they are much more hollowed out interiorly than those of any other forceps that the author has ever seen. They are thus adapted to lie in close contact with every part of the child's head to which they are applied, and to admit of the reception and firm purchase, of extensive portions of its lateral parietes.

The fœtal head being somewhat differently curved at different parts of its surface, it has been attempted to dispose of the curvature of different portions of the blades of the instrument accordingly; so as to ensure, as much as possible, equal contact and equal pressure upon all parts of the head where the fangs or frames of the fenestræ ought to be in apposition to it. An obvious effect of this mechanism of the blades is a prodigious increment of strength which they acquire, compatibly with very small dimensions both as to breadth and thickness of their frames. This peculiar structure was suggested by repeated applications and careful fittings, of several varieties of forceps to the heads of new-born children. From the actual width of these fenestræ, and narrowness of the frames surrounding them, the more prominent parts of the head are allowed to escape through their apertures to some distance beyond them, and indeed into full contact with considerable tracts of the vaginal parietes.

It being occasionally necessary that the child's head should be subjected to some compression, that result is sufficiently provided for by an adequate strength which is given to the shanks, and the metallic parts of the handles, as also to the posterior portions of the fangs. But these latter are gradually made thinner as they advance forward, so that towards the middle of the blade they do not exceed in thickness one-twelfth part of an inch.

This instrument, in common with Osborn's, adopts the curve in the direction of the edges of the blades, as suggested by Levret. In four out of five cases of operations with the forceps, this peculiar form of it entitles it to great preference over the single-curved forceps of Denman and Haighton: whereas for

Fig. 2.

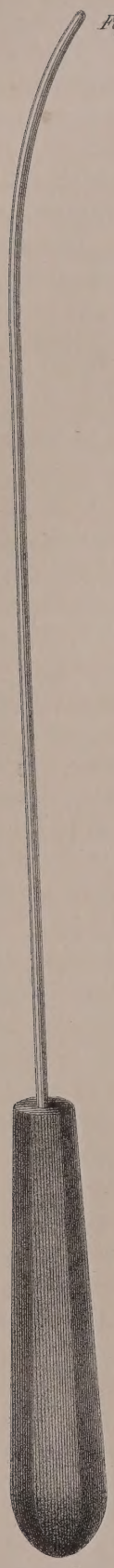

Fig. 1.

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tion as a matter of extreme importance to the results of obstetric operations, the author has furnished himself with a pair of forceps, or rather with two pairs of this instrument, specially adapted to cases of the third and fourth positions of the fœtal head within the pelvis; viz. the positions with the face directed to the right and left sides of the pelvis respectively. The blades of these instruments are of unequal length. The longer is intended to apply to the latero-frontal parts of the fœtal head and face, and is to be carried up in the direction of the anterior termination of one of the oblique diameters of the pelvis: while the shorter blade is to be carried up in the direction of the opposite termination of the same diameters, so as to correspond to one or the other, as the case may be, of the sacro-iliac junctions, and applied to an occipito-lateral part of the fœtal head immediately behind the ear. But these modifications of the obstetric forceps will be more particularly described and better understood when we come to give rules for the application of the instrument in the third and fourth instrumental positions. See plate XXXVIII. fig. 2 and 3.

### A MODIFICATION OF A PAIR OF FORCEPS, WITH BLADES OF UNQUAL LENGTH.

In plate XXXIX. is given a representation of another form of forceps, with blades of unequal length. Cases of arrest or suspension of uterine action are occasionally met with, where considerable benefit might be derived from a very moderate amount of mechanical assistance; where however there might be a motive for applying a principal part of the artificial force deemed useful in one particular locality principally, relatively either to the fœtal head, or to the cavity of the pelvis. For cases of this description a short blade has been adapted to correspond with, and chiefly for the purpose of acting as a fulcrum to, one of the broader blades of the common forceps. The small-bladed instrument is not curved in the direction of its edges, so that it will act equally well with either counterpart of the broad-bladed forceps.

### OF THE LONG FORCEPS.

The instrument which in this country is known by the designation of long forceps, is a pair of forceps of sufficient length to admit of being applied to the fœtal head before it has entered into the cavity of the pelvis. For a certain proportion of such cases a peculiar modification of the forceps is here proposed, which, in the author's opinion, is much better calculated to answer its special indication than any other variety of the instrument that he has yet seen. For representations of the different parts of the instrument, see pl. XXXVI. and XXXVII.

### OF THE CIRCUMSTANCES INDICATING THE USE OF THE FORCEPS IN THE PRACTICE OF MIDWIFERY.

1. The first and most important indication for the use of obstetric instruments

Fig. 2.

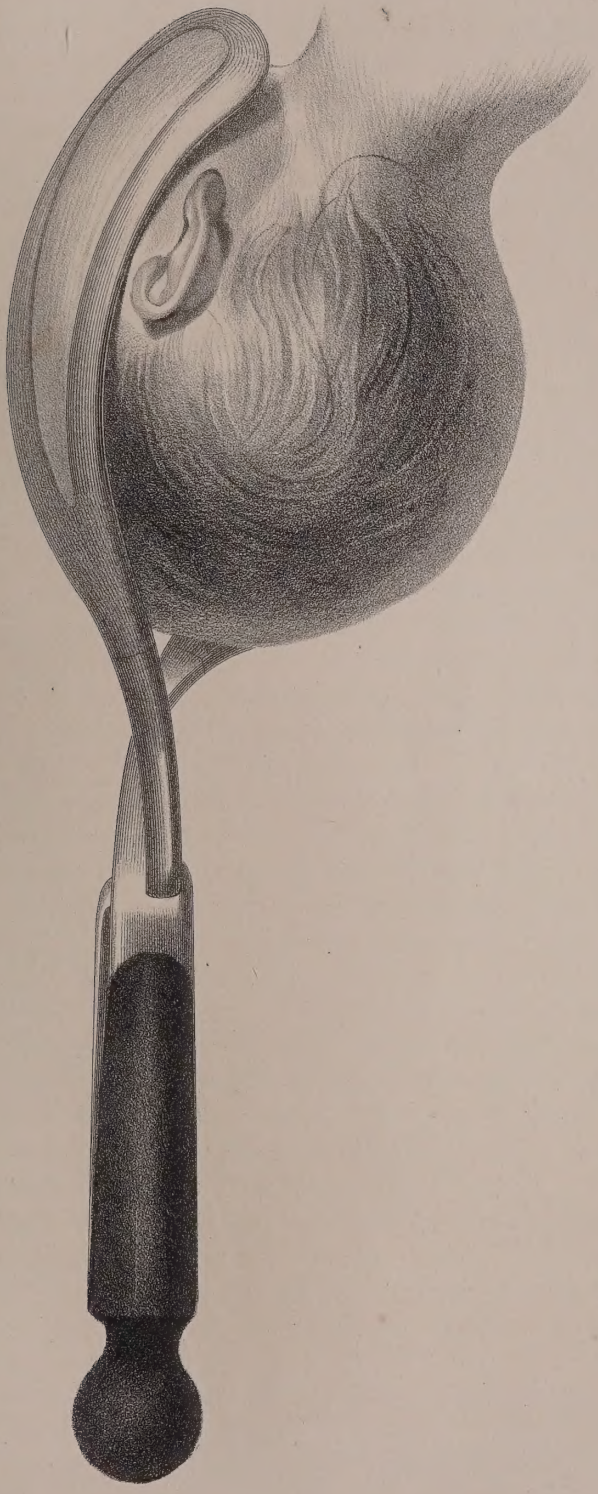
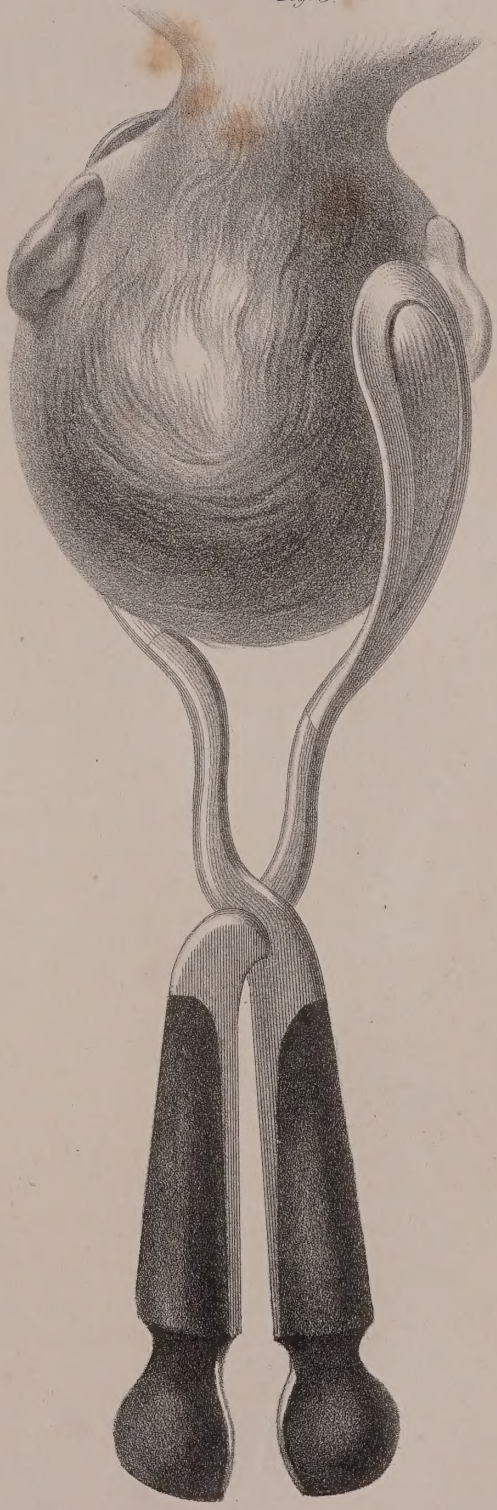


Fig. 3.



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of any kind, is a positive and well-ascertained insufficiency of the natural powers to accomplish the act of parturition with safety to the lives and structures implicated in the process.

2. The use of the modern forceps presumes also upon a sufficiency of space within the pelvis to admit with the aid of that instrument of an eventually living birth.

3. But even then, the forceps can only be used with propriety when their application is judged upon the whole preferable to all other modes of delivery.

4. Cases of head presentations are generally considered, at least in this country, as the exclusive objects of treatment by this class of instruments.

5. Inasmuch as the forceps cannot be used without exposing the mother to some degree of inconvenience, if not of positive injury of structure, they should never be employed for delivering dead children.

The first indication for the use of instruments as here founded on the insufficiency of the unassisted natural powers to accomplish the act of parturition with safety to the lives and structures interested in the effort, is of course now propounded in its most general and comprehensive sense, as dependent upon or, as in different cases, produced by a great variety of circumstances. An accurate knowledge of the nature and operation of the circumstances here referred to, forms indeed an essential attribute of a medical practitioner's competency to judge correctly of the duty, and finally to determine upon the expediency of having recourse to the aid of instruments. This kind of knowledge, like every other, is more or less capable of being analysed and deliberated upon as to its principles, and of being methodically distributed into rules and precepts in its practical application to its objects.

The causes of difficult parturition, tending to occasion difficulties eventually productive of exhaustion, have been usually and very properly arranged by practical writers under two heads; viz. the want of sufficient action of the parturient organs; and the want of sufficient space to admit of the child being propelled through the pelvis at the ordinary expense of power exerted in the process.

The want of sufficient action of the uterus, and of the other organs usually consenting with and assisting it in the business of parturition, may depend either upon the absolute want or absence of the power required; or simply upon its inadequate exertion, the power itself being present, but operating with great irregularity and feebleness, or perhaps oppressed by influences difficult either to recognise or to remove.

The want of sufficient power, as an inherent principle of the parturient organs, is of extremely rare occurrence; and indeed the author is much disposed to doubt its existence, excepting as an effect of its exhaustion from long-continued action, or as an accompaniment of some important disease of the uterine system.

There is probably no word in the language of midwifery that is more fre-

quently misapplied than the term EXHAUSTION, as sometimes used in connexion with cases of tedious and laborious parturition; and certainly none in the use of which it is more important to be precisely and practically correct. It is indeed the constant language of the puerperal chamber, and during every stage of a labour, with the exception of two or three of the first hours, that "the patient is greatly exhausted;" whilst, after the lapse of twelve or twenty hours, it often becomes a duty of no easy performance to the practitioner to support the spirits and to calm the fears of all the parties concerned. To warrant his active interference the medical attendant must, however, obtain more substantial evidence for the fact of an exhausted state of the parturient powers than the mere sensations of the patient or the alarms of her friends. Experience proves, that the efforts of labour are required to be exerted with extraordinary vigour, and for a long time, in order to produce a state of the agents of parturition even approaching to what might deserve the name of exhaustion. The correct application of the term exhaustion must obviously bear reference to the previous strength of the woman, to the vigour and frequency of the parturient efforts, to the form of the pelvis, to the condition of the soft parts concerned in the process, and in a certain degree to the reduced state of the constitutional powers, together with many other circumstances. The author does not remember having ever witnessed such a state of the powers of parturition as he should consider correctly designated by the epithet exhaustion, presenting itself WITHIN TWENTY-FOUR HOURS from the commencement of true labour-pains. He does not mean to assert that the accession of other evils, which might complicate and endanger the issues of the process, and which might require the interposition of artificial assistance, might not occur, long before that period: but he is now speaking of exhaustion, from failure of the powers, consequent upon previous and excessive exertion. After a duration, therefore, of only twenty-four hours' labour, even though the action of the uterus might seem to be more or less perfectly suspended, it would be a novelty, and indeed a perfect surprise to him, to recognise such a suspension as an EFFECT OF EXHAUSTION. On the contrary, he has known very safe and prosperous labours last for TWO AND THREE ENTIRE DAYS, without producing any thing like a state of exhaustion. The time occupied by a labour is therefore never to be considered exclusively a measure of its influence in the production of an exhausted state of the parturient powers.

Again, there can be no absolute exhaustion of the powers of parturition, in the case of a previously healthy subject, unless accompanied by a dangerous prostration of the general constitutional strength: whereas such a condition cannot be presumed to exist, without its being attended by an extreme contusion of the organs more immediately concerned in the process.

## OF THE IMPORTANCE OF FORMING A TRUE PROGNOSIS, WHEN INSTRUMENTS ARE INTENDED TO BE USED.

The process of parturition being usually perfectly well performed without artificial assistance, and seldom so well when art interposes, it is evident that when such necessity becomes unavoidable, it should always be made an object of the most serious professional duty, as it must ever be one of the soundest policy, to take a cautious and comprehensive survey of all the circumstances that can in any way influence or contribute towards the formation of a just prognosis.

Obstetric operations in general, and most especially those which are included under our present head of subject, are duties of the most momentous magnitude. Not only is their expediency to be founded, in almost all cases, on their inevitable necessity; but for the honour of the art, and the professional credit of the practitioner, no less than for the safety of the patient, the reasons and grounds of that necessity should be distinctly understood and laid down. The objects of a prognosis during labour, and more especially when it may be intended to aid the natural efforts by the use of instruments, are necessarily two-fold; and embrace the probable fate and subsequent interests of at least two human beings. Obstetric operations should perhaps never be undertaken excepting as a means of diminishing or of removing some well-marked or strongly apprehended cause of danger, either to the mother or her progeny. Hence it follows, that, whenever an obstetric operation of any consequence is JUDICIOUSLY proposed, it is to be assumed that there is danger, either present or apprehended, to be obviated by it. But to this assumption of existing danger, must also be added a certain contingent risk of danger to be incurred by the operation itself: and it were, indeed, well for the credit of the art, if this latter source of danger could be estimated as of trifling importance in comparison of it with the former. But an obstetric prognosis should never be founded upon a calculation of absolute success, as to all its objects, of any considerable operation. In a case, for instance, of simple tardiness of the process of parturition, the long duration of the labour must have the effect of exposing the child's head to a degree of pressure which might prove injurious or fatal to it, solely on account of its long continuance, independently of any additional pressure which it must sustain from the use of instruments.

It may happen that a coil of the umbilical cord, by surrounding the shoulders or stretching over the curved back of the child, might be exposed to a degree of pressure for many hours, and especially after the discharge of the liquor amnii, which could scarcely fail to impede, and even ultimately to destroy, the circulation of blood within its vessels.

We are moreover sometimes witnesses of still-births, in circumstances where we find it extremely difficult, or impossible, to assign satisfactory causes for them.

In all cases indicating the use of the forceps, we operate professedly with the hope of preserving both lives: but for the reasons here stated, and many others which might be suggested, we can never be confident in our prognosis as to the safety of the child's life. We have occasionally to perform operations of this kind AS MERE TRIALS, in cases of a known or strongly-presumed deficiency of space. There is, moreover, no certain rule for measuring the time during which the head of a child may be arrested or impacted within a confined pelvis with impunity to its life. Not only must many circumstances of the greatest importance as to their influence on the results of difficult parturition, such as the bulk, form, and the degree of ossification of the child's head, together with the natural strength and robustness of constitution of the fœtal subject, remain unknown to us until after the entire completion of the process; but many others might be presumed to exist, which, by reason of their uncertain amount or contingent and indeterminate nature, would often make it extremely difficult for us to give them, whether singly or collectively, their proper value in the general calculation of a calm and cautious prognosis. Amongst those of the latter class, we may enumerate the uncertain amount of pressure applied to the child's head by the operation of the natural agents of birth, the additional compression which it must sustain from the action of the forceps upon it, the degree and duration of each successive application of the compressing force so exerted, the length of the intervals between each reiterated effort, the more or less perfect exemption from pressure of the head between such intervals, the form and bearing of the instrument relatively to the parts of the head to which it is made to apply, the amount and form of the remaining space through which the child's head may yet have to pass, and perhaps, above all, the general intelligence and dexterity of the practitioner in making use of his instruments. To calculate positively, therefore, upon a happy issue both for mother and child, can at no time be considered wise or advisable. To purchase a reasonable chance of success is an object of sufficient value to warrant the performance of an operation, and would usually furnish an argument of sufficient weight with the patient's friends to induce their compliance with a suggestion to that effect.

If the arrest should appear to have been produced by simple malposition of the child's head, without the probability of any injury having been already sustained by the structure of the parts lining the pelvis, the practitioner may be permitted, with certain cautious reserves, to hold out the prospect of a happy termination. The same opinion also, properly guarded, may be given in all other cases of difficulty occasioned by impediments easily and safely removable.

On the contrary, we sometimes meet with cases where it would be proper to guard the prognosis with more than ordinary caution, and even to lean towards the anticipation of an unfavourable issue. Suppose, for example, that of a labour of already forty or fifty hours' duration: that during a considerable proportion of that time the action of the uterus, and of the other

agents associated with it in the business of labour, shall have been more than ordinarily violent; the parts lining the pelvis to be much swelled and very tender to the touch; that the patient may have complained for many hours of fixed pains of the hypogastrium, or of the lower part of the back or loins; that the throes of labour, without perhaps being less frequent, are become decidedly less powerful and less efficient; and that the pulse, after having been remarkable for excess of strength, but comparatively moderate as to frequency, has sunk into a state of considerable feebleness, great frequency, and some irregularity; and all these symptoms accompanied by a marked alteration in the expression of the countenance; in a case of this kind, without any positive evidence of the child's death, it would be the obvious duty of the medical attendant to think seriously of doing something speedily to save the life even of the mother. But the circumstances should be considered as being so serious, at least as to the possibilities of the issue, that he would not be warranted in an undertaking to operate under any DEFINITE PLEDGE OR RESPONSIBILITY for the consequences. An operation in such desperate circumstances might possibly prove the means of saving both lives. But there could be no certainty that it would ensure the preservation even of ONE. The chance of danger to the life of the child is generally in direct proportion to the degree and duration of the pressure to which its head is exposed during its transit through the pelvis.

When the child undergoes a degree of compression fatal to its life, there is always great danger that the soft parts lining the pelvis of the mother may be involved in considerable risk of injury from the same cause. If the fœtal head shall have occupied the pelvis only for twenty-four hours, the maternal structures concerned will most frequently escape destruction and also generally any very material injury. This statement is intended more especially to apply to cases of severe or protracted labours, consummated ultimately without the use of instruments.

The employment of artificial power must be considered as a most important accession to the other materials of a prognosis. It is not to be supposed that a mechanical power, consisting of two blades of steel, carried up into the pelvis so as to embrace on opposite sides the head of a full-grown child, and there so applied and wielded as unavoidably to press upon the tender structures lining that cavity, with a certain degree of force, can ever be used without exposing the textures of the parts so implicated to some amount of danger, be it more or less, of contusion. We may observe that laceration of the soft parts, constituting the natural flooring of the pelvis in the living subject, is, in point of fact, a frequent consequence of such manœuvres. Nineteen parts out of twenty of the boastings which we encounter in the writings of foreign authors, and now and then, but not so frequently, in the productions of our own countrymen, of the prodigious facility and success of their obstetric operations, and of the safety more especially of the class of instruments the use of which we are at present

more particularly considering, are false and unfounded representations. Can any thing, for instance, be more mischievous, more calculated to mislead, and to impose upon the inexperienced, than the roughly-sketched cases of Giffard, who has recorded many examples of operations with the forceps and the vectis, or, as he himself spoke of them, with one or both branches of his extractor, but scarcely one which was attended either with difficulty or danger?

Of all the instruments used in the practice of midwifery, those of the present class are unquestionably the most dangerous to the mother; inasmuch as in all cases where the forceps are used, the maternal tissues are more or less liable to the effects of contusion. All the fangs and frame-work of the instrument are made of tempered steel; and let them be ever so well covered and defended, they will still retain a great degree of hardness, calculated to bruise and to fret soft and living texture which might be interposed between their convex surfaces and the solid walls of the pelvis.

These observations are applicable to the average of forceps cases, and without reference to such as are supposed to be involved in extraordinary danger. We are often indeed not competent to say, that a case may not be already involved in danger, although danger from impaction or arrest of long duration of the fœtal head within the pelvis may not have even been thought of. We may even form conjectures, and express doubts, upon some very material points; but the author knows of no circumstances of a sufficiently decisive nature, which could authorize us, in all cases of long retention of the fœtal head within the pelvis, to pronounce, absolutely, on their ultimate issues, whether we have recourse to the use of the forceps or not. Tenderness and swelling of the parts about the vulva, much tenderness of the tissues within the pelvis, and especially of those about its superior aperture, fœtor and bad colour of the discharges, and these drainings being mixed with meconium, great soreness of the abdomen, a manifest diminution or sinking of the powers concerned in the propulsion of the child, and especially of the constitutional strength of the patient, together with a diminution of power and increase of frequency of the pulse: all these are unpleasant symptoms, and indicate considerable danger both to mother and child: but they are not singly, nor even collectively, sufficient to establish the fact of a state of injury of the maternal parts, which may not admit of their being yet rescued from destruction. They, indeed, indicate most urgently and unequivocally the expediency of mechanical interference without loss of time; but they also indicate, with equal urgency, the very doubtful and guarded nature of the prognosis which should be laid down upon undertaking the responsibility of delivering with the forceps under such circumstances. The probability, upon the whole, might be a still-birth as to the fate of the child; and much constitutional as well as local disturbance, with purulent discharges and sloughings from the vagina, for several or for many days afterwards, in respect to that of the mother.

It is obvious that the mother cannot be made liable to these accidents without also being exposed to imminent danger even of loss of life. Much of the issue

of such a case will doubtless depend upon the patient's general strength and previous state of constitution. At all events, it will be the interest, the true policy, as well as the professional and moral duty of the practitioner, whose particular office it will be to operate, to state strongly his apprehensions, and, especially, to guard against the too confident expectation of a doubly happy issue. The prognosis ought to state, at some length, the principal sources and bearings of the danger, and how far one or both lives might be implicated in peril. The several known results of such unfortunate struggles should be clearly stated, at least as matters of possibility. The structures of the parts most liable to pressure being considered as having already incurred more or less of the evil of contusion; it might be often prudent to repress the too fond confidence of the patient, and her friends, that she might finally escape from its consequences, until a sufficient length of time should elapse to warrant a full assurance of impunity. The usual dates of sloughings of vaginal tissues in consequence of severe labours, are between the sixth and the ninth days after delivery. In one instance within the author's knowledge, the slough did not separate till the thirteenth day after the consummation of the birth. Involuntary micturition presenting itself in the course of a few hours, or on the day immediately subsequent to a difficult labour, is generally a matter of much less consequence, than when that sympton supervenes about the time just stated. In the one case it only indicates temporary weakness, or paralysis of the muscles concerned; with, perhaps, a degree of tenderness and intumescence of the neck of the bladder and the upper part of the urethra, which will gradually subside; whereas in the other, it is the effect of an irreparable solution of continuity, an incurable breach into the interior of the parts affected from loss of substance.

As this cause of misery to the patient might, however, be the effect either of an inferior degree of pressure, applied for a long time by the child's head, or of a more violent pressure applied during a shorter period by the forceps, it should always be a matter of serious consideration to the operator, to be perfectly distinct as to the proper elements or materials of his prognosis. It has been observed that an early occurrence of the symptom is usually the effects of a temporary weakness of the organs: but it should be added, that it might also present itself as an immediate effect of puncture or laceration from the undexterous and violent use of instruments. It is not often that the bladder should be mechanically exposed even to contact, much less to injurious pressure from the forceps; which, indeed, can only happen when a blade of that instrument is passed up immediately behind the symphysis pubis.

The above observations are intended most especially to apply to cases where the danger of destruction of parts is more immediately anticipated than that of loss of life. There are, however, instances where the latter danger exists to so great a degree, as almost entirely to forbid the hope of deriving any substantial advantage either from the use of the forceps, or that of any other instrument; and yet where it might be considered a proper measure to effect the delivery

by artificial means. We are here necessarily supposing an assemblage of the worst possible symptoms; that these symptoms have supervened in the sequel of parturient struggles of great violence and of long duration; that the parts within the cavity, or at the brim of the pelvis, are presumed to be in a state of extreme contusion, inflammation, or even actual mortification; that the patient is incapable of bearing the slightest touch upon the hypogastrium without being distressed by it, or else that she may seem to bear considerable pressure upon the abdomen from diminished sensibility to pain, in consequence of the accession of gangrene; that the labour-pains are become exceedingly languid, or altogether suspended, in the midst of an apparently great collapse of the general powers; that the pulse has become small, feeble, frequent, and irregular; that the countenance, in addition to the most pitiable anxiety, has acquired the usual characters of what has been denominated the FACIES HIPPOCRATICA; that the genitals are distended with venous blood, and lubricated by a discharge of putrid fluids from the uterus; and, finally, that no motions of the child may have been felt for many hours, or perhaps for days.

The lives interested in the issue of a case like this, must obviously be implicated in the greatest conceivable danger. It is only merely possible, and perhaps scarcely so much, that either the mother or child could be saved. Nevertheless, to avoid the odium which is generally attached to the professional management of cases suffered to terminate fatally without the institution of any attempts to save either mother or child; it might be right, in such desperate circumstances, to take the benefit even of the very last resources of our art. Of the two lives implicated in the event of such a case as has been just described, that of the child is perhaps upon the whole to be considered as the more valuable; or to speak more correctly, the least positively destitute of contingent value. If such, upon a deliberate estimate of all the circumstances of the case, might appear to be the actual fact; it would be proper, for that special reason, to prefer the use of the forceps to all other modes of delivery. In consideration, however, of the bruised and extremely tender state of the soft parts lining the pelvis, it is manifest that the attempt to effect that object should be made with the greatest caution; and that the whole conduct of the operation should be such as not materially to add to the chances of a fatal event to the mother. Before we engage, however, in an operation of any kind, in circumstances so truly formidable, it is obvious that we should guard the event by the only prognosis which it would be professionally or morally correct to propound.

Before we conclude our observations on this very important and practical part of our subject, it may not be improper to offer a few remarks in application of its principles to the phenomena of some of the most dangerous varieties of complex labours. Of all the complications by which the process of parturition may be endangered, those from ruptures of the bladder and the uterus are, perhaps, the most perilous or certainly fatal in their consequences. Rupture

of any superior and abdominal part of the bladder would probably end mortally in the course of a few hours, and certainly so in the course of a very few days. A cystico-vaginal rupture of the same organ, which it sometimes incurs in common with the uterus, must also be considered as an extremely dangerous incident. There might, however, be a remote chance of recovery in such a case, if we suppose the laceration not to extend into the peritoneal cavity.

In cases of rupture of the uterus generally, whether exclusively or in common with any of its contiguous structures, our prognosis should never assume any more than the mere possibility of saving even one life.

In labours complicated with puerperal convulsions requiring the use of instruments, our prognosis, which indeed should be very cautious, might however be allowed rather to incline towards a favourable issue as regarding exclusively the fate of the mother. And yet, when such cases come to be long protracted, and to be attended by symptoms requiring the use of instruments, they should by no means be considered as devoid of danger. The use of embryotomy instruments ought not to increase their danger. That of the forceps would be attended with more risk. The symptoms attendant upon such cases are indeed so formidable in their general aspect, that the friends of the patient are prepared to receive the most unfavourable prognosis frequently some hours before the melancholy scene is closed.

In cases of labour complicated with uterine hæmorrhage requiring the use of instruments, our prognosis must have for its materials the following important circumstances, viz. The quantity of blood lost before and during the labour; the time occupied by the discharge; the length of the intervals interposed between several relapses by which it may have been characterized; the amount of the shock sustained from it by the constitutional powers of the subject; the state of the parts, within and at the outlet of the pelvis, as to relaxation or rigidity; and finally, the actual competency of the practitioner to use the forceps or other instruments properly adapted to the case, without increasing the previously-existing danger of his patient.

### OF THE BEST POSITION FOR THE SUBJECTS OF OPERATIVE MIDWIFERY.

On entering upon the consideration of the more practical part of our subject, it seems proper that we should premise a few remarks on the position of the patient best adapted for the convenient and safe use of the forceps. Foreign writers have universally recommended a nearly horizontal position on the back; with the lower extremities brought over the foot of the operating bed or table, and raised up and supported on either side by assistants. This position, it cannot be denied, makes the outlet of the pelvis perfectly accessible to the movements of the operater. It also deprives the patient in a great measure of the power either of resistance or of recession. It is, moreover, no great departure from the position usually adopted for natural labours in most parts of

the continent; and it may indeed be added, that it affords ample room for wielding the tremendous forceps commonly used abroad. Notwithstanding these concessions, it is nevertheless the author's opinion, that the position generally used in England, that of lying on the left side, and as nearly as may be to the edge of the bed, is much better adapted for short forceps operations than any other.

When a female is about to be made the subject of a common forceps operation, she is to be placed on her left side, and her breech brought as near as may be convenient to the edge of the bed. Her trunk should lie in an oblique or an almost directly transverse position across the bed; with her lower extremities drawn up towards her body, so as to form a considerable angle with the trunk. In this position of the subject, the outlet of the pelvis becomes sufficiently accessible to the manœuvres of the practitioner. The principal difficulty imputable to the adoption of the position here recommended, is the greater opportunity which it gives to the patient of keeping her lower extremities closely together, and of otherwise disposing of them in such a manner as to interfere with the free movements of the handles of the instrument. This inconvenience may however be effectually obviated, by employing an assistant, or a female attendant, to raise the right knee to the distance of about twelve or fifteen inches from the other; and then to carry the same extremity upwards, as far as may be practicable, towards the abdomen. But this assistance will not frequently be required; and indeed it will be scarcely ever necessary until after the introduction of the first blade of the forceps into the pelvis.

### OF THE DUTY OF AN ACCURATE EXAMINATION PER VAGINAM ON THE INTENDED USE OF INSTRUMENTS.

The institution of an accurate examination per vaginam is at all times an indispensable duty during labour: and when the expediency of having recourse to the use of instruments as a means of expediting or effecting the delivery is contemplated, it becomes doubly important. In all such cases the operator, however assisted or supported by the opinion of others, must ascertain the precise facts of the labour for himself. Upon him will devolve eventually the principal part of the responsibility; and for that reason it is evident that he should take nothing upon trust. It should by him therefore especially be considered of the last importance, to examine attentively all the facts and bearings of his case, before he commences the operation: and should his anticipation of a favourable issue be less sanguine than that of his colleagues in consultation, he should take pains to state distinctly the grounds of his apprehensions. The general objects of examination per vaginam, with a reference to the intended use of instruments to assist parturition, may be briefly enumerated as follows: viz. To ascertain the size and form of the pelvis, the dimensions of its several diameters at the brim, at the outlet, and throughout the whole of its course:

to ascertain the state of the orifice of the uterus, that of the vagina and its orifice, together with that of the perineum, as to relaxation, rigidity, firmness, swelling, tenderness, defective sensibility of the parts from the long duration of pressure upon them, or as to injuries from the previous and improper use either of hands or of instruments; also to ascertain the presence and character of tumours or of other obstacles to parturition; and finally, to ascertain the presentation, position, preternatural development of the presenting part etc. of the child, relatively to the form and dimensions of the passage through which it has to be transmitted. Some of the above points it is useful to know with a more immediate reference to the formation of a just prognosis: whilst of some of the others, and especially of the first and last stated objects of the examination, the most perfect attainable knowledge is an essential qualification for the proper use of obstetric instruments.

### OF THE APPLICATION OF THE FORCEPS IN DIFFERENT POSITIONS OF THE CHILD'S HEAD WITHIN THE CAVITY OF THE PELVIS.

To make what we have to advance on this subject as easy and useful as possible, we must recal the reader's attention to what has been offered in page 954, on the several varieties of position of the fœtal head within the pelvis, considered in reference to the intended use of the forceps.

1st. The use of the instrument of which we are more immediately about to treat, viz. the short or common forceps of this country, always supposes, that the head of the child shall have previously entered and reached a considerable depth within the cavity of the pelvis. This rule is considered as being perfectly well understood and established in the practice of this country; and our instrument is accordingly adapted to this more limited object only, and never used for the purpose of bringing the child's head from above the brim into the cavity of the pelvis.

2nd. The blades of the forceps, with certain exceptions and modifications to be noticed hereafter, are to be introduced, so as ultimately to be applied over the sides respectively of the head and face of the child. Thus applied, the instrument fits more accurately to the head. Its counterparts embrace a greater number of points. Judiciously constructed, they admit of a large portion of the sides of the head and face to engage within their fenestræ; they compress the head more equably, and therefore in a manner less calculated to do it injury. They occupy the least possible space within the pelvis; lock easily and perfectly, and are not liable to slip. To ensure all these advantages, it is to be taken for granted that the instrument must be both PROPERLY CONSTRUCTED AND PROPERLY USED.

3rd. The use of the forceps can never be indicated before the orifice of the uterus shall have been very amply dilated. A sufficient dilatation is here meant not only to admit of the convenient application of the instrument, without doing

violence; but also of the easy and safe extraction of the child's head through it. We may not think it necessary in all cases to wait for what is called obliteration of that aperture; but there are but few cases, and those of great urgency, from alarming hæmorrhage, profound faintings, or other imminently dangerous symptoms, which we should be willing to admit into our list of exceptions: and even these exceptions are to be allowed without prejudice to the rule which requires a sufficient development of the os uteri to admit the child's head to pass through it without incurring the risk of laceration.

4th. The left-hand counterpart of the forceps, of which the blade is to correspond to the left side of the pelvis, should generally be the first to be introduced. This rule supposes the instrument, like Levret's forceps, to have a curve in the direction of the edges of its blades, to correspond with the curved axis of the pelvis. The left-hand blade, as its name implies, is to be introduced by the left hand. The reason of the first part of the rule is to be sought in the position which is usually given in this country to the subject of the operation.

5th. The locking of the forceps is never to be effected by violence. If the two blades shall have been introduced in such a direction as to admit of being made perfectly parallel, the adjustment at the lock will be easily effected; whilst, on the contrary, the attempt to lock them in the absence of that parallelism will be attended with great difficulty, and also probably with injury to the soft parts lining the pelvis. For this reason, therefore, the practitioner must never think of using extracting force without having perfectly effected the adjustment at the lock; as in that case he could scarcely fail to incur a still greater risk of doing mischief. Peculiarities of forms, both as to pelves and instruments, as also peculiar forms and positions of fœtal heads, will severally occasion difficulties in the locking of the forceps: but these difficulties, as well as the modes of overcoming them, we shall have opportunities of treating of more at length hereafter.

6th. All operations with the forceps require to be performed VERY SLOWLY. Art should be made as much as possible to imitate nature. Nothing can be more mischievous than the pretensions and representations of certain authors in which are held up for the admiration of inexperienced readers, the facility and cleverness of rapid movements in the proceedings of obstetric mechanics. The more passive organs of parturition are usually developed by nature herself exceedingly slowly and gradually. If art should presume to dilate them rapidly and by main force, she would not fail to involve her own pretensions in discredit, and to do irreparable mischief to the victims of her rash exploits. Slowness of development of the parts concerned being an essential property of the function of parturition, why should we take upon us even to attempt to perform in a few minutes that which nature herself, even when deemed competent to do the work well, would take so many hours to accomplish? The young practitioner may, on the contrary, be fully assured that he can gain no substantial credit by

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any attempts, however plausible, to deliver his patients expeditiously; and he should be well aware that in so doing he would depart from the practice of the most judicious and most experienced masters of his art.

7th. The requisite amount of force to be used in obstetric operations should be applied by degrees, very cautiously and slowly, according to the demand for it: but the whole of the extracting force, in order to be safely and therefore successfully exerted, must be confined within very moderate limits.

### OF THE MODE OF USING THE FORCEPS WHEN THE HEAD PRESENTS IN THE FIRST POSITION.

Our first forceps position, the reader may recollect, is when the occipito-vertical part of the head is directed towards the anterior part of the pelvis. In this position, it is seldom necessary to operate until the head shall have entered pretty deeply into the cavity of the pelvis. In the situation of the head here supposed, the left ear will be found to correspond to the left side of the pelvis, and the occipito-vertical region, usually, in the language of midwifery, called the vertex, about to enter into, or perhaps actually engaged within, the arch of the pubes. After having duly adjusted the position of his patient, which he will generally find greatly to his advantage to do himself, and having seen furnished and duly examined whatever he is likely to want during the operation, the operator takes up the left-hand blade of the forceps in the manner represented in plate XXXIII. He then insinuates two or three fingers of his right hand into the vagina, and into contact with a portion of the presenting head, a little below and to the left side of the centre of its presentation, as conductors to the instrument.

It has sometimes been recommended by authors, to pass the conducting hand a great way up into the pelvis, under the pretence of making room for the easier introduction of the instrument. But from the inconvenience generally of this method, the author may be allowed to speak from experience; from the actual obstruction given by the fingers to the easy introduction of the instrument; and from the liability of the fingers to be pinched by the convex surfaces of the clams of the forceps; we may much suspect that not only the rule itself is essentially incorrect in principle; but also that, in point of fact, it has seldom been observed in practice. The only proper use of the conducting fingers is to direct accurately the point of the instrument, so as to ensure its transmission to the side or other intended part of the child's head, without pinching, distending, or otherwise unnecessarily irritating, the soft parts situated at the outlet of the pelvis. From this part of the head the instrument is then to be passed gently along its left lateral surfaces, in a line somewhat lower in the pelvis than the known situation of the ear, until it is felt to have effected its transit over the temple and forehead. It should then be gradually, and with great gentleness, raised up, and applied over the child's ear, so as to embrace easily, and at many

points of its concavity, the corresponding convexity of the fœtal head. The entire blade is then to be moved upwards along the side of the pelvis, so as to be made to embrace accurately, within its fenestra, the left occipital protuberance, together with the greater part of the ear and side of the face, even to the chin. To execute these movements accurately, it will be necessary to pay strict attention to the situation of the ear relatively to the pelvis, before they are commenced. To be confident after the introduction of the instrument of its having been correctly applied, the index finger of the right hand should be passed up along its fenestra; and if it encounter in its progress either the whole or a considerable portion of the ear, the operator may be well assured, that the left-hand branch of his forceps is very properly applied. The introduction of the first counterpart of the instrument is, indeed, very seldom attended with difficulty; nor should it be attended with scarcely any inconvenience or pain to the patient. The operator will, of course, avoid unnecessary pressure upon parts over which the instrument should glide gently and easily along. We are generally directed to be very cautious not to force the point of the instrument into the angle formed by the vagina and the unobliterated orifice of the uterus on the one hand, and to avoid pinching the lip of the uterine orifice, between the points of the blades of the forceps and the side of the child's head, on the other. With an instrument of a proper construction, and a very moderate share of dexterity in the use of it, it is scarcely possible to incur the risk of either of these accidents.

The other counterpart of the forceps is usually called the right-hand blade; because it is generally passed up as represented in pl. xxxiv. by the right hand; the left hand being then used as the conductor. The common rule for the introduction of this blade prescribes, that it should be passed up as nearly as possible in the same direction relatively to the right side of the head as the other branch had been to the left. The application of this rule, in English practice, would be found not only extremely difficult if attempted; but in the author's apprehension, scarcely practicable, without bringing the part to be operated upon two or three inches over the side of the bed. We are, of course, supposing the patient to be lying on her left side, agreeably to the prevailing custom of this country. Without insisting upon the inconvenience of bringing the nates of the subject so far over the edge of the bed as an insuperable obstacle to this procedure, it should nevertheless be considered it as a sufficient objection, to warrant a departure from the prescribed rule, if it be practicable to dispense with it without prejudice to the interests of the patient. That may, indeed, be accomplished with a considerable degree of certainty in two ways: first, by using for the second counterpart of the instrument a blade with a very short handle, or with a detached handle, admitting of being fastened to the blade after its introduction; and secondly, by making a little change in the position of the second blade during its introduction. The first method was suggested and by some persons adopted many years ago; but it appears upon the whole to be an inconvenient one. To obviate the same difficulty, it has also been proposed to

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make the second branch of the instrument flexible at or near its middle, so as to make it introducible over the right side of the child's head, and yet capable of avoiding the inconvenience of the bed. The Edinburgh forceps are constructed on this principle. The joint in the right-hand branch of our common forceps, represented in pl. xxxii. fig. 2, 3, is intended, and as the author thinks well calculated, to favour the same object.

But, the introduction of the second branch may easily be so managed, as eventually to secure the most accurate parallelism between the counterparts of the forceps when introduced, without shortening that branch, as in the case of a blade separable from the handle, and also without introducing a joint at its shank, as in the specimens of the instrument just referred to. The left-hand blade being introduced in the common way, and properly applied to the head, let its handle be moved backwards towards the inferior fourchette, to make way for the introduction of the practitioner's two first fingers of the left hand, which are now to be the conductors of the second or right-hand blade. These two fingers are to be passed into the vagina obliquely over the shank, and anteriorly to the handle of the branch of the instrument already introduced; so as to reach and be applied to the superior and posterior part of the child's head, an inch or two beyond the small fontanelle, in the direction of the sagittal suture. The second branch of the forceps is then to be taken up with the right hand, applied to and gently carried up along the palm of the left or conducting hand into the vulva; so that its interior surface, at and near the point, shall reach and be applied to the fœtal head, intermediately between the small fontanelle and the points of the two fingers of the operator's left hand. This action is well represented in pl. xxxiv. fig. 1, as already referred to. The right-hand blade may also be taken up and introduced, sometimes even more conveniently, in the manner represented in figure 2 of the same plate. Much force is happily not required in accomplishing this part of the operation; and it is hoped that the simple testimony of its attainable facility, as attempted to be represented in the drawings of each of the figures, will be received as a pretty convincing illustration of that fact. The point of the instrument having been introduced carefully, and without prejudice to the soft parts attacned to the outlet of the pelvis, into the posterior part of the vagina; it must next be carried forward by an adroit circuitous movement over the right parietal, coronal, and temporal regions of the head to its ultimate destination, and of course into easy and perfect parallelism with its antagonist blade. This movement is attempted to be shown by the representations of different portions of the second blade, in successive stages of its progress, as indicated by the dotted lines in pl. xxxv. fig. 2. The route taken during this movement of the instrument relatively to the pelvis should correspond with a curved line drawn from the anterior and right lateral part of the perineum, obliquely across the posterior portions of the right sacro-ischiatic ligaments, and then gradually upwards to the right extremity of the transverse diameter of the brim of the pelvis; which

of course will eventually bring it into strict parallelism, and more or less easy adjustment with its antagonist.

In cases of confined or misshapen pelves, as also of peculiar forms of the fœtal head or positions of it relatively to the dimensions of the pelvis, it is sometimes found very difficult, and occasionally impossible, to bring the opposite instruments into sufficient parallelism to admit of their being safely locked. This difficulty, it is obvious, will more frequently occur when broad-bladed, than when narrow-bladed forceps are attempted to be used. At the same time, it is to be observed that such a difficulty, whenever experienced by a competent operator, should be considered as an indication of a reduced chance of the ultimate success of the operation as a means of preservation of the child. The child's life, however, must not be hastily yielded up, nor until nature and art shall have exerted their utmost and united resources; until the most powerful efforts of the one, and the best-devised expedients of the other, shall have been fairly and deliberately exerted without effect.

Among the artificial expedients presumed proper to be made trial of in cases of this description, is the exchange of one or both blades of the forceps first used, for others of different forms and dimensions. It sometimes happens, that a pelvis is much less ample as to its capacity on one side of its cavity than on the other. This peculiarity should furnish a motive for the trial of a narrow-bladed branch to act on that side, as an antagonist to a branch of the broad-bladed forceps on the other. In giving an order for the construction of a set of forceps, it should form a part of the instructions that all their several counterparts should be made to act together in pairs. In pl. xxx. B. fig. 1, may be seen a specimen of a branch of a pair of forceps with a narrow blade, accurately adjusted at the lock with another having a wide fenestra.

Another mode of obtaining a safe purchase of the child's head in cases not admitting of the convenient introduction of the second branch of a pair of forceps of the common construction might be obtained by adapting a very short blade to meet the intention, less perfectly indeed, of antagonizing the first introduced counterpart, but still sufficiently to act as a safe fulcrum to its purchase. This is an expedient so very simple in its principle, and yet so perfectly effectual in many cases not admitting of the use of the common forceps, that the author has often been much surprised that it has not been thought of long ago. This little appendage to the common obstetric forceps is represented in plate xxxix. The smaller and shorter blade is used partially as an antagonist, but principally as a fulcrum to the action of the large blade; and from having experienced its convenience on several different occasions, the author upon the whole feels anxious to recommend it to the particular attention of his obstetric readers.

Having at length introduced and duly adjusted at the lock both branches of his forceps, the practitioner has then to encourage his patient, and to intimate his readiness and ability to give her some useful assistance upon the return of

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her pains. Before he begins however to draw down, he should again inquire into every incident of the case; viz. whether both counterparts of his instru ment may have been passed up without occasioning any serious inconvenience. Is there an appearance of blood to be detected AFTER the passing up of the instrument, of which there was not any before the commencement of the operation? Does the patient make any strongly-expressed complaints of the manœuvres of the practitioner; such as of her being cut, torn, or otherwise violently treated? Do both branches of the forceps feel to be firmly and well applied to the head? Is the child's head perceptibly moveable within the pelvis, etc. etc.? As it is of great importance to act rather in aid of nature than in opposition to her efforts or in their absence; we cannot be too observant of the well-known rule of drawing down with the instrument only, or principally, during the parturient contractions of the uterus. After properly adjusting the instrument at the lock, without however bringing the handles forcibly together, we accordingly wait for a pain. Upon observing some preparation or indication of its approach, we complete the adjustment at the lock; and upon the accession of the propellent effort, we draw down gently but firmly with both hands applied to the instrument; the right hand embracing the handles; and the left giving it easy support and assistance by directing the movements of the shanks and blades. This action is well represented in pl. XXXV. The purchase thus represented does not, and is not intended to, give an idea of the greatest possible amount of attracting power: it is, however, quite sufficient for its object, compatibly with the safety and future well-being of the mother. The dimensions of the forceps, as well as their strength at the clams, should be such as to admit of the application to the child's head of a certain amount of compressing force. By the exertion of such force, it is evident that the bulk of the fœtal head must be diminished in some of its diameters. If, therefore, in the conduct of an operation with the forceps, no adequate advantage is gained by moderate traction, then, rather than greatly add to the attracting force exerted, it would often be more judicious practice to compress the fœtal head a little more firmly. Pulling down violently with instruments made of steel, which must necessarily impinge dreadfully upon the parts lining the pelvis, must involve the results of such operations in great jeopardy and peril. If by a moderate degree of compression of the child's head, as represented to be applied by the right hand in pl. XXXVI. just referred to, aided by a still more moderate amount of traction, made during a natural expellent action of the uterus, no perceptible advantage is gained; the practitioner should become very diffident as to the extent of his hopes, and observe the greatest caution as to any further exertion of this form of artificial power. Should these attempts be several times repeated, and still manifestly without the least degree of progress; he should deliberate most seriously, first as to the expediency of perseverance in his original intention, and then as to the choice, if any, of ulterior measures. He should coolly reflect on what already may have been prematurely attempted.

It may possibly occur to him, that it might have been better if he had waited longer; and that even now he might withdraw his instrument, not only without detriment, but with much probable advantage to his suffering patient. The withdrawing of the instrument for a time, and its re-introduction again at a more convenient season, is a matter of the utmost facility and safety to a practitioner who is sufficiently dexterous in this part of his duty. He knows how to insinuate and to humour his instrument so well, that he is able to change its relative positions at pleasure, and even to introduce or to withdraw it, almost without the cognizance of the patient. Before the forceps are withdrawn on these occasions, it may be often prudent to attempt to change the position of the head within the pelvis in some small degree; and then, once or twice more, to draw it gently down with a moderately firm purchase. These measures still not succeeding; and it being supposed that the forceps may not have been prematurely applied, and the symptoms attendant on the case to be such as to indicate speedy delivery by any means compatible with the safety of the mother; it will then become the practitioner's duty to withdraw the forceps altogether, and to have recourse to the use of embryotomy instruments. Before however he could come to this decision, he should be perfectly satisfied that his want of success might not be, in a great measure, imputable to rigidity of the vagina and other soft parts.

When, on the other hand, the practitioner is sensible of a certain degree of power being exerted by the instrument over the child's head during each traction; in other words, if the child's head is felt perceptibly to descend lower into the pelvis than it had done before; then indeed he may hope that a little time and perseverance, with much gentleness, may enable him to gain the whole of his object. It is scarcely necessary to observe, that the traction at every stage of the operation must be made in a line with the axis of the pelvis. In proportion, therefore, as the head advances towards, and through the inferior aperture of the passage, it becomes necessary that the handles of the forceps should be raised more and more towards the abdomen of the patient. The artificial movements must be made in strict conformity to the mechanism of natural labour. As to the particular kind of action proper to be used during the abduction, authors have generally recommended the drawing down to be made in a line, alternately changing its direction from side to side of the axis of the passage. The only danger of this rule is, its liability to be understood in a different sense from what it is really intended to convey; it being often supposed to admit of a much greater extent of lateral movement than it would be prudent or safe to use. The forceps, it should be remembered, are properly and primarily a direct adductor; and any divergence given to the handles from the curved line of the axis of the passage, whether it be made alternately from side to side, or in all directions, by a sort of circular movement, in addition to and during the adduction, must be resorted to with extreme caution. In the alternate movement from side to side, the lateral parts of the pelvis are made

by turns, points of abutment or fulcra to the corresponding portions of the blades of the forceps; and this, it is obvious, must occasion a certain degree of pressure upon the parts in question, superadded to the general pressure to which they would otherwise be exposed. The circular movement here alluded to, provided it be moderate, and not combined with a violent degree of adduction, appears upon the whole less calculated to produce a destructive contusion of the soft parts, and, at the same time, more promotive of its immediate object, that of effecting a gentle extension of the soft parts, than the alternate movements of the handles from side to side.

It is a principle recommended by almost all English writers, as well as by many foreigners, that the forceps being once applied, should not be again removed until the head of the child shall have been entirely withdrawn. See Denman's Introduction to the Practice of Midwifery, sect. 17. The reason usually offered in favour of this rule, is the mere possibility that the pains might cease after the removal of the instrument, and that it might become necessary to introduce it a second time. As a rule of general practice, the author feels it his bounden duty to express his total dissent from its principle. Nothing can be more absurd and unnecessary, not to say mischievous, than its universal or even general adoption. In nine out of ten forceps cases, a very moderate assistance, either slightly to change the position of the head, or to advance its progress beyond the seat of its temporary lodgement, or simply beyond the operation of the impediment which may have occasioned its arrest, is generally all that is required. So far from approving of the principle of the rule in question, he not only in his own practice rejects it, but almost always reverses it. Experience has long and abundantly convinced him, that it is very seldom necessary to allow the forceps to remain any considerable length of time within the pelvis, even in those cases where the use of such a power might be perfectly well indicated. In cases, for instance, of simple arrest before the head has got down sufficiently low to produce an impression upon the perineum, and in the absence of complications requiring speedy delivery, we should expose our patient to much unnecessary risk of contusion, by keeping the instrument in constant application until the fœtal head might clear the vulva. He has had occasion already to object to certain published representations of easy and rapid artificial deliveries. The principle of the rule here adverted to is almost equally objectionable in practice. It is next to impossible to use an artificial power with so much admirable moderation and patience, as nature herself exhibits in her usual very slow development of the maternal organs. But if it be assumed that the instrument is not to be effectively used whilst allowed to remain within the pelvis beyond the actual demand for the exertion of its proper power, and not at all after the extension of a certain amount of assistance, excepting on the failure of the natural efforts; then it is maintained that it should be entirely withdrawn until such failure shall have declared itself.

The arrested head having once got clear of a principal impediment to its progress, the remainder of the labour is usually accomplished without further difficulty, and almost certainly without further necessity for the use of instruments. Tedious labours might occasionally be very essentially benefited by a moderate degree of assistance, or a certain amount of artificial power exerted only for a short time; whereas their issue might be rendered very doubtful by an obstinate perseverance in the use of the forceps, until the fœtal head was actually in the world. A greater degree of pressure may be sustained with impunity, or at least without much danger of permanent injury, when applied only for a short time, than a much less degree, when applied continuously and for an indefinitely protracted period. It is probable that limited degrees of malposition of the head in the pelvis should be considered as among the most frequent causes of protracted labours, such as are ultimately attended with the death of the child, but seldom succeeded by any bad consequences to the mother. A competent master of the art might often have it in his power to save the lives of children thus circumstanced, by the slightest possible application of a well-adapted mechanical power. The required movement being once effected, nature would then prove quite equal to her proper work, and the demand for artificial aid would instantly cease.

The final exit of the child's head should never be hurried; nor even allowed, under circumstances of instrumental interference, to take place with great rapidity. The necessary development of the inferior part of the vagina, including the perineum and os externum, is almost always, and especially in first labours, the work of a long time. When nature departs from her own proper law of effecting this part of the function very slowly, and by degrees scarcely perceptible, the structures more immediately concerned in the latter efforts of the struggle are liable to be torn, and are, it is well known, sometimes actually lacerated. It is not, therefore, to be expected that these important organs should escape contusions and lacerations, when exposed to the distention and pressure incident to the use of obstetric instruments made of steel, and often not very dexterously used.

### OF THE USE OF THE FORCEPS WHEN THE CHILD'S HEAD IS IN THE SECOND POSITION.

In the second position of the fœtal head within the pelvis, the occipito-vertical part of it is directed towards the hollow of the sacrum. The method of introducing the forceps in this position of the child's head does not differ materially from that observed in the first. It is here also most convenient to introduce the left-hand blade first. The fingers of the right hand are to be introduced along the left labium pudendi into the vagina, and into contact with the right parietal parts of the child's head, to serve as conductors

to the left-hand blade of the forceps. The precise position of the head having been ascertained by examination, the left-hand blade of the forceps is to be taken up by the left hand, as described in the first position operation, and agreeably to the representation given in pl. XXXIII., and carried along the palm and fingers of the right hand into contact with the head of the child. This instrument must be introduced relatively to the pelvis, somewhat more anteriorly, that is, so as to have its concave edge about an inch more towards the front of the pelvis, than in the first position.

The object of this slight difference of proceeding in the second case is to avoid encountering the ear, which, without the caution here indicated, would be found directly in the route of the instrument. Having been thus cautiously carried over the right parietal and temporal regions of the child's head, the left-hand blade of the forceps will then, by a slight movement backwards, slip easily into its best possible situation over the right ear. The right-hand blade, or that which corresponds when introduced with the right side of the pelvis, is then to be taken up by the right hand, and carried up, along the palm and fingers of the left hand, into contact with the posterior and superior part of the child's head; the large fontanelle, in this position, being generally pretty directly the presenting part. The instrument must be so conducted and applied, that its flat internal surface, near the point, shall feel to be in accurate and easy apposition to the convex surface of the posterior and superior parietal region of the head. To effect this object, the first direction and movement of the second or right-hand blade should be very nearly parallel with the horizon; its point being introduced over the fourchette towards the posterior parietes of the vagina, and its handles extended between the thighs of the patient, nearly at right angles with her trunk. From this position of the second blade, pl. XXXIV., its direction is to be gradually changed as attempted to be represented in pl. XXXV. fig. 2, by a dexterous and very gentle movement upwards, until it shall come into strict parallelism with its antagonist blade, when it should include the left parietal protuberance, the ear, and side of the face, within its fenestra, and admit of easy adjustment at the lock. In this position of the head, it will be generally convenient to bring the point of the blade to the side of the pelvis somewhat sooner, and to incline it more towards the front, than when the head is in the first position. The object of this precaution is, to enable the practitioner to avoid the left ear. When both branches of the forceps shall have thus been duly applied and adjusted, the remaining part of the delivery is to be conducted much in the same manner, and with the same observance of the mechanism of natural birth, as was recommended in the treatment of the case under the circumstances of the first position. We accordingly draw down, correspondently with the axis of the pelvis, with great caution and tenderness; so as to give, especially at first, but a moderate degree of assistance to the natural efforts. When a natural effort is exhausted, we also desist; or in the absence of pains, we observe certain

intervals between our successive attempts to draw down the head. After six or eight well-directed and very cautious tractions shall have been made, with every proper attention to the peculiar circumstances of the case, the practitioner might reasonably expect to have gained some positive advantage. If, on the other hand, no progress whatever is perceived to have been made; that fact being perfectly well ascertained; it will then become his duty, at least for a time, to desist from further efforts, and to withdraw the forceps from the pelvis.

The experienced reader is fully aware, that the case of which we are at present treating, is attended with much more difficulty, and also with much more uncertainty as to its effects on the life of the child, than that of a head presentation in the first position. The form of the head when in the second position, and the cavity of the pelvis, are in opposite and adverse relations to each other. If, in addition to these inconveniences, the fœtal head should exceed the standard size, or the pelvis be in ever so small a degree defective as to some of its most essential dimensions; an amount of difficulty would very probably result which might not admit of being obviated by a safe use of the forceps. Should our efforts so far succeed as to prove the means of bringing down the head sufficiently low to bear strongly on the perineum, it would then remain for consideration whether the instrument should not be withdrawn; or whether it might be necessary, or even proper, to continue to give further assistance. If we suppose the uterine efforts to be powerful; and the general state of the patient such as to admit of a few hours' further delay; the better practice would be to surrender the remaining part of the labour to the disposal of nature herself. In that event, the os externum and perineum would be developed much more gradually, and therefore probably much more safely to their respective structures.

Artificial mechanism, however dexterously and cautiously applied, can seldom be so gentle, and devoid of violence, as the natural operations of the organs themselves. It is well known that the head, when presenting in this position, requires to be propelled or conducted very nearly in a line parallel with its antero-posterior diameter; and as, consequently, it generally happens, that the vertex is the part to engage first in the os externum, it is obvious that the perineum must suffer immense distention before a sufficient passage can be prepared for the delivery of so considerable a bulk. Add to this the possibility of a narrow arch of the pubes, and the danger of the perineum would be not a little enhanced. The chance of escaping laceration of it would, indeed, be in direct proportion to the care and good management of the practitioner; which, in the author's opinion, would seldom fail to dictate to him the great advantage, or rather the absolute necessity, of abstaining from all further use of the forceps, after having brought the head so far into the lower part of the pelvis as to make it bear upon the perineum. When the anterior part of the occiput effects its transit over the fourchette, the fore part of the head making a

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simultaneous movement downwards, the chin escapes often with a click from under the arch of the pubes. The instrument, if kept applied thus far, will now become disengaged from the head as a matter of course; and the after part of the management will be to be conducted as in natural labour.

### OF THE USE OF THE FORCEPS UNDER THE CIRCUMSTANCES OF THE THIRD POSITION.

In this position the forehead of the child is directed towards the right side of the pelvis; and the right ear is to be felt immediately behind the symphysis of the pubes. The fœtal head is especially liable to become arrested in its progress when presenting in this position; and the arrest being, for the most part, solely attributable to the unfavourableness of the position; to rectify that position will constitute the practitioner's principal, or, perhaps, only duty. That being accomplished, nature will then, in most cases, finish her work with perfect facility and prosperity. Before, however, any attempt at an operation is to be made, the practitioner should be certain that the position is precisely, or very nearly, what we are now supposing. In this position of the head, the convex margin of the right external ear, anatomically called its helix, looks towards the left side of the pelvis. To facilitate the further progress of a birth thus arrested, the practitioner will have to reduce this position into the first position, by which the face will be carried into the hollow of the sacrum, and the occipito-vertical part of the head brought forward, and made to engage under the arch of the pubes. To effect the change of position here recommended with as much facility, and in a manner to incur as little danger to the structures concerned, as possible, the author has now to offer to his readers a new modification of the forceps specially adapted for the relief of protracted labours, under the circumstances of the third and fourth positions. See pl. XXXVIII. figs. 2, 3. With any of the forceps in common use, it is very difficult to effect the object now proposed, viz. that of changing the relative situation of the fœtal head within the pelvis, from the third and fourth into the first position, without exposing the perineum to great risk of over-distention, and especially the frænal fibres of the fourchette to fretting and laceration; and the still more important structures attached to and lining the cavity of the pelvis in front, to the danger of severe and destructive contusion.

By the proper use of the instrument now proposed, all these serious inconveniences may be very easily and safely avoided. This instrument consists of two blades of unequal length, and so curved as to fit accurately to a fœtal head of ordinary size, when applied respectively, the one over the superior portions of the parietal and frontal surfaces of its right side, and including the greatest part of the right cheek, and the other immediately behind the left ear. To accomplish this intention, the short-bladed branch of the instrume..

is to be introduced into the left sacro-iliac district of the pelvis, and applied to the latero-occipital portion of the head, the part immediately behind the left ear which will be found to correspond with the left sacro-iliac junction of the pelvis. The long blade is then to be passed up along the right lateral and anterior region of the pelvis, and so applied as to include within its fenestra a portion of the right cheek, and a considerable tract of surface, situated above and anteriorly to the right ear. The blades are then to be so adjusted, that the short one shall act as a fulcrum, and also in some degree as an antagonist, to the other, and admit of easy adjustment at the lock. The instrument being supposed to be properly applied and adjusted, as in fig. 2, a gentle rotary movement of the head is then to be effected from left to right, or in the same direction with the sun's course, and consisting of about one-fourth of a revolution, so as to bring the occipito-vertical part of the head into the arch of the pubes, and to carry the face into the hollow of the sacrum. The reader may easily understand that with an instrument of this construction, the change in the position of the head may, in all cases admitting of relief by the forceps, be readily effected, without exposing the parts either within or at the outlet of the pelvis to any risk of injury from severe pressure. It is evident that no part of the short blade can easily come into contact either with the neck of the bladder or the urethra, a circumstance which of itself might be deemed sufficient to decide the superiority of this instrument, for the special purpose here to be effected, over every other specimen of forceps which have been hitherto proposed.

In order to effect this change of position, as he supposed the more easily, Smellie directed the whole of the head to be lifted up into a higher part of the cavity, or even above the brim of the pelvis; that he might be furnished with an ampler range of space for the freedom of the movement to be performed. In most cases, however, the required movement will be easily performed, without this previous lifting up of the fœtal head. When necessary, the elevation should be made with great slowness and caution.

If the instrument to be used is curved in the direction of the edges of the blades, its counterparts should be so applied to the head as to ensure a correspondence of their convex edges to the face and anterior part of the head; the face being to be eventually carried into the hollow of the sacrum, with which the convex edges of the blades of curved forceps are especially intended to correspond. After effecting the required change of position of the child's head, the instrument, including both its counterparts, should be forthwith withdrawn. Nature will then, in a great majority of cases, finish the work. The child's head will speedily descend into the flooring of the pelvis; where it will gradually urge the perineum into a state of suitable relaxation; and whence it will eventually escape at the outlet without extraordinary difficulty, without danger, and without further assistance.

### OF THE USE OF THE FORCEPS IN THE FOURTH POSITION OF THE CHILD'S HEAD.

In this position, the face is directed to the left side of the pelvis. The left ear is to be felt immediately behind the symphysis of the pubes. The further descent of the head into the pelvis is prevented by the malposition of the fœtal head, as has been already explained in the preceding case; and its reduction into the first position is to be effected by precisely the same expedient, with the difference only of reversing the rotary movement. In this case, the face being directed to the left side, the movement in question will be to be made from right to left, or in the opposite direction to that of the sun's course, and to describe about one-fourth of a circle; so as to carry the face from its arrested position on the left side of the pelvis to the hollow of the sacrum. This movement being duly effected, the labour will then probably advance without further assistance; or else it will require only a trifling contribution of auxiliary force from the forceps, to make up for the diminished power of the uterus, in consequence of the prolonged exertion of that organ. In some cases, where, from a considerable expenditure of uterine power already incurred, it might be doubtful whether nature might yet be competent to resume her efforts, and, in her improved circumstances, to complete her work; or where the case might assume an alarming character from the accession of hæmorrhage, faintings, or other dangerous complications of the labour, it would often be the proper and the only safe practice to finish the labour artificially, as soon as the state of the soft parts might warrant such a procedure. The reader will easily perceive that each of the last two positions, viz. the third and the fourth, will require for its relief its own appropriate instrument. The two instruments, as given in plate XXXVII. figs. 2, 3, differ only in their twist or oblique curve. This difference however is essential.

Cases of intermediate positions between any two of the above four forceps positions are, in practice, to be resolved into one or other of the first two positions. It should ever be remembered, in all practicable cases, that the child's face should be determined to the hollow of the sacrum. If we suppose the face to answer very nearly to the acetabulum of either side, that would be a position of the child's head departing very little from either the third or fourth of the regular positions of which we have treated; and it might become a question of some importance to determine how far it might be proper to attempt the conversion of such a case into a first position case. The general probability would perhaps be, that the child's body might be situated in the uterus, with its back towards one side of the mother, and its front towards the other. The appearance of a greater fulness on one side of the abdomen than on the other would add strength to this notion. Upon that presumption, it would unquestionably be the better practice to rotate the face into the hollow of the sacrum,

by one of the third or fourth position instruments. Should, on the other hand, the central parts of the face be in correspondence with a part of the pelvis, intermediate between the acetabulum and the symphysis of the pubes; then the much safer practice would be to bring the face directly forwards to the front, and to carry the vertex to the hollow of the sacrum; combining, with that movement, a cautious attempt to advance the descent principally of the posterior part of the head. The reverse movement would very probably have the effect of dangerously twisting the neck. It is well known that the uterus usually contracts more or less powerfully soon after the escape of the liquor amnii, so as to come into pretty close contact with the more accessible parts of the child, and so as to retain it in its then actual position more or less firmly. In such cases, therefore, it would be very doubtful whether so great a change of position of the fœtal head as we are now assuming, amounting at least to a full third of a rotation, might be followed by a corresponding change in the relative situation of the body of the child. In a state of comparative inaction, or of great relaxation of the uterus, such an instance of good fortune might perhaps not be unreasonably hoped for: whereas in the opposite condition of that organ, it would be equally idle and improper to calculate upon any such advantage; and it would therefore be the duty of the practitioner to meet the other and less evil of the case, viz. that of changing the oblique position, now the subject of our discussion, to a second position case, notwithstanding the acknowledged difficulties and uncertainties incident to such cases. As to the practice to be adopted in perfect third and fourth positions, the rule is precise, and admits of no doubt nor hesitation: it is to rotate the face from the side of the pelvis into the hollow of the sacrum. The great difficulty is to determine what might be the greatest amount of obliquity or departure from these positions that could be presumed to admit of reduction to the first position, compatibly with the preservation of the child's life. In the presence of strong uterine action, the author is satisfied that the better general principle of treatment in such cases would be, to rotate the face at once forwards into perfect correspondence with the front of the pelvis: and should the head eventually in that position fail to be propelled by the vigorous action of the uterus into the outlet of the pelvis, or prove even too large to admit of being brought thither by a safe use of the forceps; the case would then of course have to be referred to another department of instrumental midwifery.

### OF THE DISPOSAL OF THE FORCEPS, AFTER THE HEAD SHALL HAVE BEEN BROUGHT DOWN SUFFICIENTLY LOW INTO THE PELVIS TO BEAR UPON THE PERINEUM.

After having brought down the child's head to bear pretty strongly upon the perineum, it is the author's general practice to withdraw the forceps. The perineal tumour is, to a certain extent, to be considered as an evidence, that

the outlet of the pelvis is not defective in its dimensions; and also as affording at least a presumption, that any subsequent tediousness must depend either upon want of sufficient uterine action to overcome the ordinary resistance, or upon the presence of an unusual degree of rigidity of the soft parts. Hence a positive deficiency of uterine action supplies a motive, and may be well presumed, in such cases, to furnish a rule for not withdrawing the forceps until the fœtal head shall have been brought very low down into the outlet of the pelvis; so as to engage with a principal part of its bulk in the os externum. In the total absence of uterine action, of which the cases are indeed very rare, it is evident that the forceps may not be withdrawn until the delivery of the head shall have been entirely completed. In some, perhaps in most of these cases, it will be found a decided advantage to withdraw one of the ordinary full-sized blades, and to substitute for it the short or fulcrum blade of the forceps represented in pl. XXXIX.

In withdrawing the forceps before the final exit of the child's head out of the pelvis, especially if we suppose the instrument to fit so accurately to the head as the broad-bladed forceps, considered the common forceps of this dissertation, are known to do; a little attention to the principle of such a movement becomes quite necessary. It is obvious that an instrument so considerably curved; having its interior surface hollowed out so as to embrace more or less closely the convex surface of the child's head; and having its own convex surfaces almost equally closely embraced by the parietes of the vagina and pelvis, should not be attempted to be withdrawn in a direct line: as such a procedure could not fail to involve the structure of the maternal soft parts in great danger of laceration. The first movement to be made towards the removal of one of the blades of the forceps should be, to separate it perfectly from its fellow. The handle of the branch not intended to be withdrawn should then be moved to one side, or a little backwards or forwards as the case may require; in order to make room for the other to pass with more facility. The handle of the branch to be withdrawn should next be taken hold of by the proper hand, generally the right hand; and carried by a gentle circuitous movement forwards and upwards towards the abdomen of the patient. The shank, and successively the different portions of the blade of the instrument, would then be to be raised and brought forwards by a continuance of the same movement, supported and directed by the other hand; and the whole gradually withdrawn in such a curved line, as should ensure the mutual apposition of as much of the concave surface of the instrument to the convex surface of the fœtal head, during every stage of the procedure, as might be practicable. By due observance of this method, the instrument might be withdrawn; first one blade, and then, when necessary, the other; without any danger whatever of doing violence to a single fibre of the parts concerned, and very often without even the cognizance of the patient. If it were determined, as a matter of indispensable necessity, to effect the entire delivery of the head by the forceps; then it would become the

duty of the practitioner to proceed slowly and cautiously to effect that object; observing, however, the greatest care to follow nature as his safest guide. It is quite surprising how very gradual is generally the exit of the head through the outlet of the pelvis, and the os externum, in natural parturition, and most especially in cases of first labours.

If the degree of caution here recommended, amounting to the utmost abstinence from violence, be not observed in these operations of art, it will often be impossible to prevent contusion and rupture of the parts concerned. It might, indeed, sometimes become necessary that the operator, not only should desist from any further use of artificial power; but also that he should guard the structures most exposed, and already perhaps in some degree injured by his manœuvres, against the effects of inordinately powerful efforts even of the natural agents of birth. It often requires great attention, and a degree of dexterity unfortunately not possessed by all who profess to practise instrumental midwifery, to pass up the second or right-hand branch of the common forceps, without over-distending and bruising the inferior fourchette, and the other parts immediately contiguous to and surrounding it. But an injury of this kind, however trifling in itself, proves in many cases an incident of most serious importance in the sequel; as it seldom fails to become the commencement, or at least the disponent cause, of a rupture of much greater extent during the tremendous distention necessarily sustained by these parts at the moment of the head's final transit through the os externum.

### OF THE USE AND SPECIAL PROPERTIES OF THE LONG FORCEPS.

The instrument known in this country by the designation of long forceps, is simply a pair of forceps of sufficient length to admit of their being applied to the head of the child before its engagement within the cavity of the pelvis. It is generally considered, I believe, both in this country and on the continent, that the use of the forceps, under these circumstances, was first suggested and practised by Dr. Smellie. Smellie's Midwifery, book iii. chap. 2. So far, however, was that great improver of our art from considering the use of such a power devoid of danger, that he carefully abstained from recommending it to others, and even from exhibiting a specimen of the instrument in his lectures. The long forceps have scarcely yet obtained a sufficient footing in England to procure for them the consideration of an article of general sale. The author has known more than one practitioner of eminence, in this walk of the profession, who had made trials of the long forceps in the earlier years of their practice, but who afterwards found reason to lay them altogether aside: and he would observe generally, by way of caution to practitioners of limited opportunities, that their most ardent partisans, with a very few exceptions, have been youthful candidates for professional distinction, without sufficient experience to warrant the eager confidence of their pretensions. For this reason, however, the long

forceps should not be considered as an instrument totally destitute of safe power.

The long forceps, as the name implies, are much longer than the forceps in common use; and, as we have already observed, are of sufficient length to admit of being applied to the child's head before its entry into the cavity of the pelvis. In this country, indeed, they are exclusively used for that purpose.

The circumstances indicating the use of the long forceps are happily very few, and consequently of rare occurrence.

Of these indications, an insufficiency of space at the brim of the pelvis seems entitled to our first notice; at least as a matter of inquiry. The space required at the brim of the pelvis, in the direction of the conjugate diameter, is about four inches. The actual space supplied at this part, in well-formed pelves, is four inches and a quarter. The head of a child of standard size, measuring three inches and a half from one parietal protuberance to the other, both inclusive, and the soft parts within the pelvis necessarily occupying a certain amount of space; it follows that the head of a well-grown child could not engage in a pelvis having only three inches and a half for its conjugate diameter, without the adoption of some contrivance for effecting either an enlargement of the conjugate diameter of the pelvis, or a diminution of the child's head in the direction of its transverse diameter. As to the former, it must at once appear impossible, in any sensible or useful degree, to accomplish it, compatibly with the safety of the patient. But with respect to the latter, it is well known that nature herself has made a beneficent provision for it, in the apparently unfinished architecture of the fœtal head; in consequence of which it is mouldable, within certain limits, into different forms, and compressible in certain directions into smaller measures. In cases of limited confinement of the superior aperture of the pelvis, the agents of parturition themselves are found competent, by the pressure to which they expose the gradually engaging parietes of the fœtal head against the brim, to effect all the reduction of it which in such cases might be convenient or necessary. The power however of the uterus upon the child, whilst the head is yet above the brim of the pelvis, is probably not so great as after its descent into that cavity, when its contracting fibres may be well supposed to acquire a greater degree of power in proportion to their greater length of leverage. In some cases, however, of defective capacity of the pelvis at the brim, the uterus is often competent to prodigious exertions; so the fœtal head has been sometimes known to sustain a diminution of bulk of upwards of half an inch in the direction of its transverse diameter.

If nature then is equal to the production of such important effects, it may well be asked, whether, in cases of the same kind, it can ever be justifiable or advantageous to interpose any assistance of art. We may assume, as a general principle, that nature must herself be right as to the very gradual manner in which she effects the compression of the fœtal head. By a procedure so slow and cautious, the circulations both of the vessels of the brain and those of the

scalp, are allowed time to accommodate themselves to the degree of compression which the head has to sustain. The compression is also made in the most favourable direction as to the object to be attained by it; and it seems probable that the fœtal head might thus be compelled by nature to undergo a greater diminution of bulk in the requisite diameters, compatibly with the child's life, than might be safely effected by any artificial compression whatever. For these reasons, it should be considered as generally very improper to have recourse to the use of the long forceps, as long as nature can be intrusted to exert her efforts without compromising the safety of the mother; and while she holds out a fair promise, that eventually, and compatibly with a living birth, she may triumph over her difficulty.

But in some other cases of limited defect of space at the brim of the pelvis, we occasionally encounter an apparent deficiency of uterine action, as if nature were really conscious of her difficulty and danger, when she might probably succeed in the ultimate propulsion of the fœtal head into the pelvis, were her powers to be fully called forth and exerted. Such are principally the circumstances in which the use of the long forceps might be indicated in cases of arrest of the fœtal head at the brim of the pelvis. But the long forceps must be used under these circumstances with extreme caution even by experienced operators; and in the author's opinion, should not be used at all by persons unaccustomed to the more common duties of instrumental midwifery, and not perfectly competent to ascertain the dimensions of the brim of the pelvis, together with the actual conditions of all the parts and functions of the subjects more immediately interested in the labour. From the very limited range of their possible utility in cases of this kind, the long forceps are obviously an obstetric power not often to be had recourse to even for the assistance of severe labours; and one, indeed, much more frequently to be cautiously tried as a preliminary measure, and a possible preventive of other and more desperate expedients, than to be ranked among the ordinary and positive resources of our art.

2. It may be added, that the use of the long forceps is further and fully warranted for the relief of certain labours requiring to be brought to a speedy termination on account of the sudden accession of dangerous complications. In cases, for instance, of profuse uterine hæmorrhage, the orifice of the uterus being supposed to be amply dilated, but the head of the child still at the brim of the pelvis, this method of treatment might sometimes very well deserve consideration in comparison with delivery by turning. In many such cases, the child's head might be brought into the pelvis with perfect safety by means of the long forceps; and when there, it would of course be accessible to the purchase of one or other of the several modifications of the short forceps already sufficiently known to the reader.

3. The long forceps may also sometimes appear to be indicated in cases of labour complicated with rupture of the uterus. Head presentations, under these melancholy circumstances, are obviously the only objects of treatment by

an instrument of this description. The patient usually sustains this tremendous accident either before or soon after the entry of the fœtal head into the superior aperture of the pelvis, and therefore before it shall have got sufficiently into the interior of its cavity, to be within the reach of the short forceps. The long forceps would seem to be a resource, in such circumstances, not to be entirely overlooked; but certainly, on the other hand, not to be considered as of any great value; inasmuch as in most cases, the practitioner would find it extremely difficult to effect the application of his instrument on account of the great recession and unsteadiness of the fœtal head after the escape of the body, whether wholly or partially, into the general cavity of the abdomen. Add to this, that defective capacity of the brim of the pelvis is the most frequent cause of spontaneous lacerations of the womb.

4. The author has already had occasion to advert to the occasional accession of syncope during labour. Should such an unexpected complication present itself before the descent of the child's head into the cavity of the pelvis, it might possibly in some cases be preferable practice to have recourse to the use of the long forceps, than to attempt the delivery by turning.

English practitioners having for the most part totally rejected the use of the long forceps, have consistently enough observed a very proper silence as to the mode of using them; whilst the majority of foreign writers have given such instructions for their application, as in some cases it would be extremely dangerous, and in others totally impracticable, to observe. We here more especially refer to the rule commonly prescribed by foreigners of applying the two branches of the long forceps over the sides of the head and ears of the child in ALL cases. This rule may, indeed, in some degree be considered as a consequence of the limited properties of the particular sort of instrument about which those gentlemen have written; inasmuch as the long iron-handled forceps of the continent, and the long-bladed and wooden-handled instrument which has been usually called the long forceps in this country, and is the common forceps of Professor Siebold, can only be applied with safety to the sides of the child's head. But considering, as the author does, that a large majority of the cases usually deemed proper objects of forceps operations before the entry of the head into the pelvis, are such as do not properly admit of the use of a pair of forceps under the circumstances of their commonly-prescribed mode of application, viz. to the sides of the child's head; he takes the liberty of proposing, for the special relief of the cases in question, a particular modification of the obstetric forceps, better adapted, as he thinks, for their purpose, than any variety of that instrument that he has yet seen. As however the instrument which he is about to propose, is neither intended nor calculated to supersede altogether the use of the old long forceps, and as the latter are also the more simple of the two, it seems right that we should first treat of those cases which are still to remain the proper objects of their application.

### OF THE USE OF THE LONG FORCEPS WHEN THE FŒTAL OCCIPUT CORRESPONDS WITH THE FRONT OF THE PELVIS.

The most common position of the child's head at the earlier stages of labour is in correspondence with the oblique diameter of the pelvis, its occipito-vertical region being directed to one of the acetabula, and the forehead to the sacro-iliac junction of the opposite side. In a case of considerable confinement at the brim, this position would gradually resolve itself into one or more or less perfectly transverse. In pelves, however, having more space proportionally in the direction of the short diameter than in that of the transverse, the occiput would, in most cases, be naturally determined towards the pubes. For cases of head presentation, under the circumstances of this position, the long forceps already in use appear upon the whole to be well adapted. That instrument might, however, admit of some improvement by a moderate increase of the breadth of its fenestræ, or, at least, of the fenestra of one of its blades, and preferably perhaps of that which in the course of its introduction should correspond with the left side of the pelvis. As to the mode of using the forceps in this position of the head, it is scarcely necessary to give any particular directions; it being as nearly as possible the same kind of procedure as was recommended in case first of the application of the common forceps. The remote situation of the head, in this case, will however allow the conducting fingers to be passed high up into the vagina, and perhaps in some cases require the whole of the hand to be introduced into the pelvis. After locking the instrument with great caution, so as to avoid the possibility of including any important tissue within its grasp, we draw down with cautious firmness in strict correspondence with the axis of the pelvis. A few repetitions of efforts of this kind co-operating with the simultaneous exertions of the natural powers, will soon enable us to form some judgment of the probable issue of our interference. An obstinate immoveableness of the head, and no perceptible descent or increase of engagement of it within the cavity of the pelvis being effected by such cautious endeavours, would naturally indicate the duty at least of PAUSING; and very probably, that of desisting altogether from further interference. To make an effort of this kind, with a view to the preservation of the child's life, with extreme caution, and yet with as much firmness as may be compatible with the perfect safety of the mother, is all that can be done to meet the utmost demands either of humanity or professional duty. To give every possible chance for the success of this movement, it might be sometimes useful to attempt to incline the child's face towards one of the sacro-iliac junctions, which might probably ensure for it some little more space than it could have when directly opposed to the promontory of the sacrum. This attempt failing as to one side, it might be right to repeat it as to the other. Having brought down the forehead below the level of the posterior part of the linea-ilio pectinea, it will then become necessary to carry the face to the hollow of the sacrum.

After having thus, with the greatest caution imaginable, completed the adduction of the fœtal head into the cavity of the pelvis, it will be proper, in a great majority of cases, to withdraw the instrument forthwith and altogether, and to surrender the remaining part of the labour to the disposal of nature.

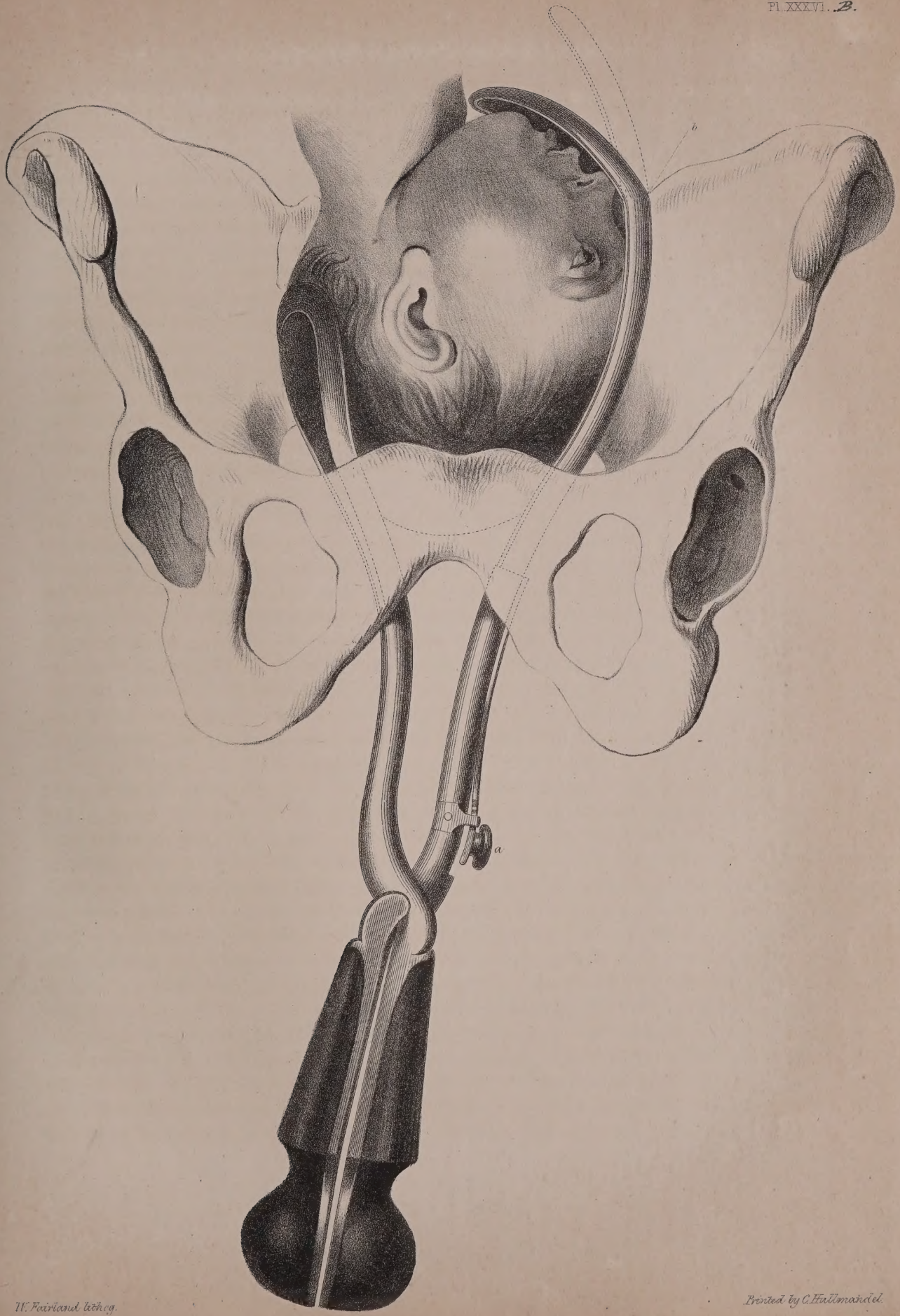
### OF THE USE OF THE LONG FORCEPS WHEN THE FOREHEAD IS DETERMINED TOWARDS THE FRONT OF THE PELVIS.

The use of the long forceps supposes here, as in the last case, the fœtal head to be yet situated above the brim of the pelvis, or to be only very partially engaged within the superior aperture. Labours, under the circumstances of this position, are attended with much more difficulty in every stage of their progress, whether treated by instruments or not, than their opposites in relative situation to the front of the pelvis. It has indeed been sometimes pretended, that by a dexterous use of the fingers, or at all events by that of the forceps, this unfortunate position might be gradually converted into a more or less perfect first position. But as to any such power being possessed by the hand, the assertion is altogether unfounded, and amounts only to an idle and vain pretence; and with respect to the eligibility of the movement in question being attempted by the forceps, it is almost self-evident that such a procedure could not fail to effect the destruction of the child by giving a fatal twist to its neck. To reverse this position therefore, however unfortunate, though it were not impracticable, which there is no doubt it would sometimes prove, should always be considered as highly inexpedient and dangerous. We have accordingly to meet the case as one really difficult to manage, and uncertain as to its issue. Both branches of the forceps must be passed up relatively to the pelvis as in the former case. The convex edges of the blades will of course have to correspond with the concavity of the sacrum, and their posterior frames or clams will have to embrace the posterior and vertical regions of the child's head. The instrument having been applied and duly adjusted, it will, in most cases, be advisable to move the occipito-vertical part of the head a little to one side of the promontory of the sacrum, and of course preferably to that side to which there may be an already-existing tendency. The prominent vertex will thus escape direct apposition to the superior angle of the sacrum, and consequently any obstruction which might be given to it by the projection of that bone, and so probably obtain a considerable accession of room for its descent in the less-occupied space about the sacro-iliac junction. The practitioner has then to draw down in co-operation with the natural efforts, and in the direction of that part of the axis of the pelvis which might be presumed to correspond with the actual situation of the child's head. When he thinks that he has brought the occipito-vertical part of the head sufficiently below the level of the promontory of the sacrum, he will have to rotate slightly his instrument back again to its former relative direction with the several diameters of the pelvis. The instrument should then either be

withdrawn, agreeably to the principle of the rule already adverted to; or remain for further use, as the deliberate judgment of the practitioner might dictate, or the special demands of the case require.

### OF THE USE OF THE LONG FORCEPS WHEN THE OCCIPUT OF THE CHILD IS DIRECTED TO THE RIGHT SIDE OF THE PELVIS.

In nine out of ten cases of arrest or difficult entry of the child's head at the superior aperture of the pelvis, the actual position of it, is that of the forehead and face to one side, and of the occipito-vertical part of it to the other. With a trifling inclination of its back part towards the front of the pelvis, this is also almost always its relative situation during the earlier stages of natural labour. We have indeed seen, that in ordinary cases the head, during its natural descent into the pelvis, undergoes a gradual and spontaneous change of position: so that its vertex, which at first presents in more or less perfect correspondence with one of the acetabula, is gradually and imperceptibly veered by a gentle rotary movement towards the front, so as to be made to engage, with great advantage to its progress, under the arch of the pubes. It is evident however that in cases of defective capacity of the pelvis, and especially in those of labours rendered difficult by defect of space in the direction of the conjugate diameter, this gradual change of position cannot take place; and therefore, that the fœtal head must remain situated transversely across the superior aperture, either until the difficulty shall have been surmounted by a strenuous and long-continued exertion of the natural powers, or until art shall have interfered to advance its progress. Now if the arrest of the head thus situated at the superior aperture of the pelvis be really the effect of defective space in the direction of the conjugate diameter, a very little consideration will make it apparent that the long forceps of the ordinary construction is not an instrument really calculated to meet the demands of such a case by obviating its difficulty. In the application of such a pair of forceps, the blades must embrace either the lateral parts of the head, or those of the forehead and occiput. Of the respective claims to our preference of each of these modes, the author is aware that there are extant some plausible descriptions: but let these pretensions be made the subject of a little examination. If the pelvis be already too small to admit the child's head to engage in it in the position which it is presumed already to occupy, which is that of a more or less perfect correspondence of the transverse diameter of the child's head with the conjugate diameter of the pelvis, how and where is it possible to find room for the introduction and subsequent occupancy of the two blades of a pair of forceps? Those blades, in the instance of the most modern and most approved French forceps, are each of them a full sixth of an inch in thickness: and let the individual instrument preferred be ever so lightly constructed, it must occupy a certain amount of space; whereas the very condition of the case under consideration is that of an actual deficiency of space, or the




W. Fairland lith. cg.

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absence of a sufficient amount of space in the direction of the short diameter of the pelvis, even for the engagement of the head alone; without any addition to its bulk by the application to it of two blades of a powerful steel instrument. May we not also very properly insist upon the great and manifest danger of forcibly using a bulky and powerful metallic instrument, in a situation so important in respect to the nature of the structures concerned, and so confined as scarcely to admit of a remote chance of their escaping injury?

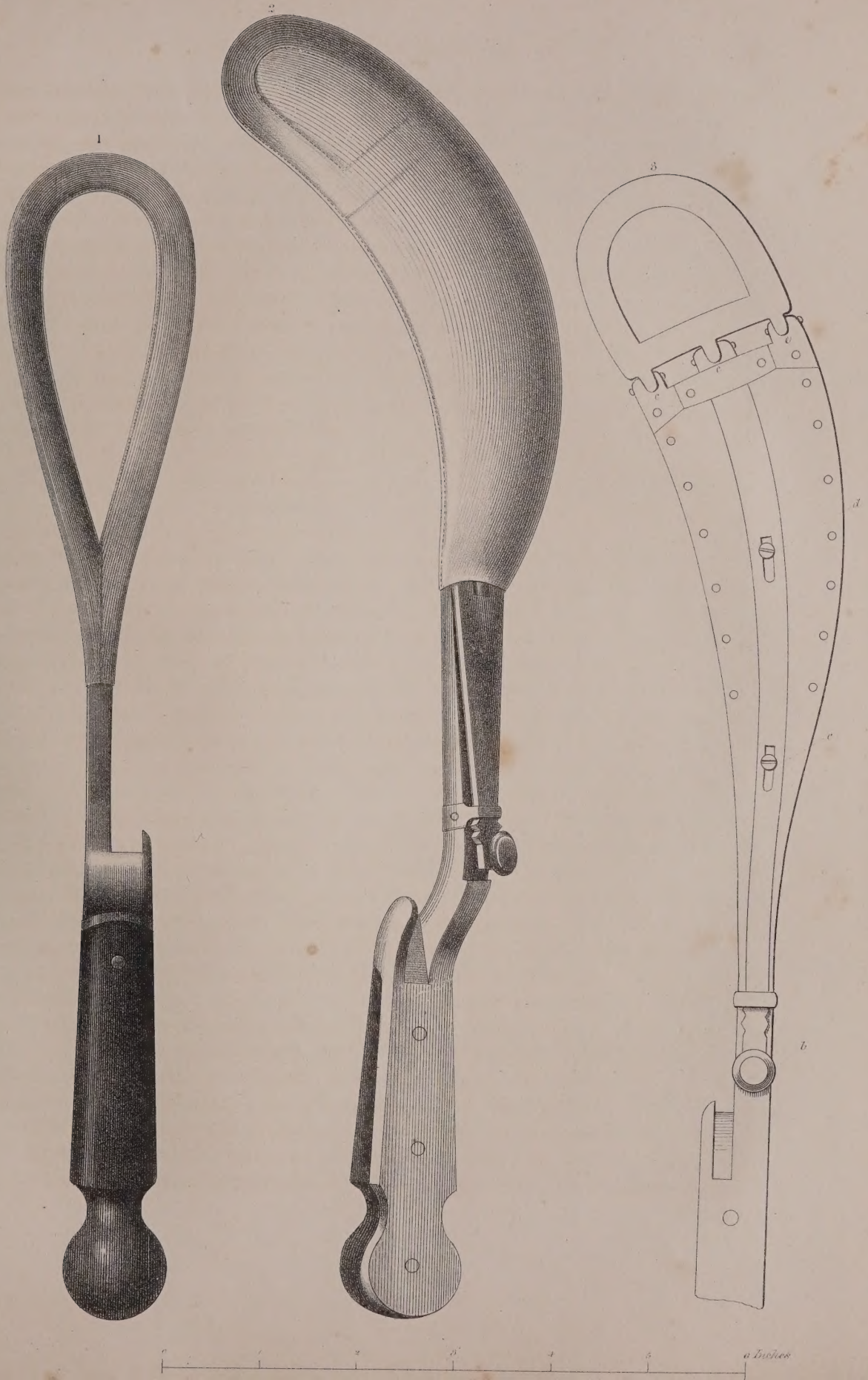
These facts being as the author thinks indisputable, he is much disposed to the belief that the long forceps have rarely if ever been properly used in the manner and circumstances here supposed; and that they never have enabled the practitioner to deliver his patient on the principles assumed, excepting in cases where nature, unassisted, might in all probability have performed the duty much better, and excepting also in some rare cases of complicated labours unaccompanied by any deficiency of space. The mere possibility of introducing the long forceps in the manner and circumstances here described, viz. that of passing up the two counterparts, one after the other, along the opposite sides of a head too large to engage in the cavity of the pelvis, is at obvious variance with the stated conditions of the case; whilst, on the other hand, the adduction of the fœtal head into the pelvis, subsequently to the reduction of its bulk by the compressing action of the forceps, must at any rate be an extremely tedious process, and therefore equally at variance with the vaunted facility, rapidity, and prosperous issues of some brilliant operations of this kind, of which we have too many published descriptions. The author at all events considers the old long forceps as decidedly unsuitable for the relief of cases of arrest of the fœtal head at the superior aperture of the pelvis, under the circumstances of either of its transverse positions. Accordingly he has to submit to the approbation and cautious trials of the profession a modification of a pair of forceps, which may be used under these circumstances with considerable effect; and certainly, if dexterously used, without any risk of doing an injury to the mother. See plates XXXVI. and XXXVII. In plate XXXVI. is represented a model of this instrument in actual application to the fœtal head, supposed to be arrested at the brim of the pelvis in a transverse position, the occiput being determined to the right, and the forehead to the left side of the mother. It consists of two counterparts of unequal length as well as of different and unequal powers. The long one is covered with leather and lined with a padding of the softest flannel; a considerable part of its blade being intended to apply firmly to the face of the child. At the distance of about an inch and three quarters from its extremity, the blade has a joint in it at B, admitting of a limited degree of flexion and extension. When this branch of the instrument is carried up to its proper destination, the jointed part of the blade will be found to correspond to the superior portions of the face. The movements of the part of the instrument anterior to the joint are made obedient to the will of the practitioner. The blade is to be passed up along the left side of the pelvis in the state of full extension. When distinctly felt to have passed

over the great convexity of the forehead, and ascertained by examination to be so far properly introduced, the anterior part of the blade is to be bent down and applied closely to the face; which is to be effected by moving the nut A upwards. This little contrivance is very simple, and its mechanism is well represented in pl. XXXVII. fig. 3. The anterior portion of the blade is made capable of two degrees of flexion with the other parts, at the pleasure of the operator. In general it will be advisable to push up the nut to the highest catch, so as to produce the greater degree of flexion, which will give to the anterior part of the blade an ample purchase over the child's forehead and face. The shorter branch is then to be passed up along the right side o fthe pelvis, and applied to the child's occiput, to act both as a fulcrum and an antagonist to the other. The power of this instrument is only partially that of a pair of forceps. There is here no coequal counterpressure applied to directly opposite parts of the head. It acts principally as an adductor; the attracting power being applied to a surface nearly opposite to the presenting part of the head. The short blade being applied to the occiput, the two branches of the forceps are then to be mutually adjusted at the lock.

In effecting this adjustment, proper caution must be used not to include any of the tissues of the mother in the locking part of the instrument. Every thing being thus made ready, we then draw down, simultaneously with the parturient contractions of the uterus, in the manner and observing the precautions which we have had former opportunities of recommending. As the head is felt to descend into the cavity of the pelvis, the operator should endeavour to carry back the face gradually into the hollow of the sacrum. This latter movement might however, in some cases, preferably be left to be accomplished either by the natural powers, or by the subsequent use of the short forceps, with blades of unequal length, represented in pl. XXXVIII.

### OF THE USE OF THE LONG FORCEPS WHEN THE OCCIPUT OF THE CHILD IS DIRECTED TO THE LEFT SIDE OF THE PELVIS.

The specimens of long forceps here proposed being curved in the direction of the edges of the blades, it is evident that the practitioner who might be induced to make trial of them would have to supply himself with two pairs, viz., one to apply under the circumstances of the last case, and the other to apply correspondently to the face and occiput when respectively directed to the left and right sides of the pelvis. The forceps to be used in this case are therefore precisely the same sort of instrument as what has just been represented in pl. XXXVI. and XXXVII., only reversed as to the direction of its surfaces: the longer branch of the former being a right-hand and that of the latter being a left-hand blade. The attraction is also to be effected precisely on the same principles. In drawing down therefore, in this case, we gradually rotate the face from the right side of the pelvis into the hollow of the sacrum.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Before the latter part of this movement is completely effected, it would perhaps be sometimes advisable to withdraw the instrument, as was recommended in the foregoing case; as, in many instances, no further assistance of art would be necessary; whilst perhaps in some others the short forceps, delineated in pl. XXXVIII. as being adapted to embrace the fœtal head diagonally, might be found a safer and more convenient power.

Before we take leave of this part of our subject, we must be permitted to repeat the expression of our firm conviction of the very limited utility of the long forceps, and indeed of any instruments, of whatever name or form, which may be intended to operate on the head of a living child, when arrested at or above the brim of a confined pelvis. At all events, mechanical powers of this kind are never to be had recourse to in cases of confined pelves, but as auxiliaries to the natural agents of labour of very limited efficiency, and to be very rarely, and then most cautiously employed.

### GENERAL OBSERVATIONS ON SOME OF THE MORE PRACTICAL POINTS OF INSTRUMENTAL MIDWIFERY.

Of all the questions that may occur during a deliberate consideration of this subject, none can exceed in importance that of the average frequency with which we should appeal to the instrumental resources of our art. We are not yet in possession of sufficient documentary evidence to enable us to decide this point; whilst the evidence we have is of so unsatisfactory and conflicting a nature, as to afford us but very slender materials for useful practical induction. It has been stated by Prof. Boer, see Medicina Obstetricia, p. 443, that the forceps have been used in the practice of an individual or of individuals, whom however he has not chosen to name, in nearly one case out of every three labours. Professor Hagen of Berlin, Versuch eines nuen lehrgebäudes der Practischen Geburtshülfe, 1782, delivered thirty-nine women out of three hundred and fifty, or one in nine, with the forceps. Professor Nägele of Heidelberg reports, that in the practice of the Lying-in Institution of that city, for the years 1817 and 1818, he used the forceps once in fifty-three cases, see the Quarterly Journal of Foreign Medicine and Surgery, vol. ii. p. 288. Dr. Burns's Principles of Midwifery, edit. 6, note in p. 441, gives the proportions of Professor Nägele as "very much corresponding with those of his own list." In a "statement of presentations at La Maison d'Accouchemens, between December 1799 and May 1809," furnished by the late M. Baudelocque, see Merriman's Synopsis, p. 306, we have the proportion of forceps to the whole number of labours as one in three hundred and fifty-three. In a synoptic table of the practice of l'Hospice de la Maternité, between 1797 and 1812, giving all the labours at 20,357 during that period, Madame Boivin, see p. 354 of her Memorial de l'Art des Accouchemens, reports, that the forceps were used ninety-six times, i. e. once in two hundred and twelve cases. Madame La Chapelle, head midwife of La Maison d'Ac-

couchement of Paris, in her Pratique des Accouchemens, vol. i. table comparative No. iii., reports the proportion of forceps cases to have been as one to one hundred and sixty-six. The entire number of labours amounted to 15,481 in nine years, wanting a few weeks. The author has private but official authority for stating that the forceps were applied eight times in the year 1823, in the practice of the lying-in wards of the Obstetric School of Göttingen; where the whole number of patients is stated to have been one hundred and fifty; giving the proportion of forceps operations to all the labours as one to eighteen three-fourths. In justice to his learned correspondent, this information should be followed with the intimation that Prof. Osiander is in the habit of exercising a large discretion in the selection for admission to the institution of persons most likely to require the assistance of art. In a similar communication from Dr. Cederschjold, Professor of Midwifery at the University of Stockholm, the author has been obligingly informed that the forceps had been used for some years past at the Obstetric Institution in that city, in the average of one in a hundred cases. Dr. Luders, a physician of the official rank of Royal Danish District Physician at Eikenförde, in Holstein, states the proportion of forceps cases in his practice as one in a hundred and nine, on the average practice of three years. M. Lobstein reports, that he used the forceps, in the lying-in wards of the civil hospital at Strasburg, twenty times in seven hundred and twelve cases. See Leroux's Journal de Médecine, vol. xxxvi. p. 125. The late Dr. Bland, in his "Calculations of the number of accidents or deaths which happen in consequence of parturition," Philosophical Transactions, vol. xxxvi., reports that he used one branch of the forceps once in four hundred and seventy-four cases. Taking the mean proportion of forceps cases, as given in six different reports of the practice of the School of Midwifery at Vienna, under the direction of the eminent Professor Böer, vide Medicinæ Obstetriciæ, pp. 65, 131, 203, 429, 486, and 585, we have one forceps operation in two hundred and thirty-eight labours. In Dr. Clarke's Abstract of the Dublin Lying-in Hospital Registry, it is stated, that in the practice of that great national establishment, between the 1st of January 1787 and the 1st of October 1793, during which period 10,317 women were delivered, the forceps were used fourteen times. When it is considered that the use of the forceps and the vectis has been very generally known in Europe at least for a full century, it cannot but appear surprising that there should still exist so great a discrepancy as to the proportional frequency of their employment in the practice of different persons. As to the highest proportional frequency referred to and justly condemned by Professor Böer, the author also has no hesitation in making it the object of his most unqualified reprobation. The Great Creator certainly never could have constituted so many of the more amiable part of our species in a manner so miserably imperfect, as to expose a proportion of upwards of one-fourth of the whole sex, to the detestable necessity of being placed at the mercy of steel instruments, in order to be able to consummate, most advantageously to themselves and to their offspring, a function so perfectly

natural, and so necessary even to the existence of the human race, as that of parturition. It would seem difficult to suppose that such a necessity could occur even once in fifty-three cases, agreeably to the proportion most approved of by Professor Burns. With a disposition to make the amplest allowance for the influence of peculiar circumstances on the mind of Dr. Burns, the author must take the liberty of expressing his conscientious and deliberate opinion, that the numerical proportion of forceps operations to the whole of labours, approved of and recommended by that gentleman, is much too high to be received as a safe standard average for the general midwifery practice of these kingdoms. If every member of our profession practising midwifery could be supposed equally competent with Dr. Burns himself to use the forceps and the vectis, without compromising the best interests of his patients, still the author would consider the proportion of Professor Nägele as too high by at least four hundred per cent.

Dr. Burns dwells indeed with great earnestness on the dangers of procrastination TO THE MOTHER; and illustrates his doctrine by a reference to the results of the very remarkable tardiness of the practice, in respect to the use of instruments, adopted in the Dublin Lying-in Hospital, as published in Dr. Breen's tabular reports. It is a very common remark that comparisons are odious; but, in a matter of so much practical importance, the reader perhaps will excuse the apparent indelicacy of the following statement, which he will scarcely fail to place in contrast with some of the facts of the Dublin reports, viz. that the author does not recollect a single example in the practice of the Royal Maternity Charity in his district, of a forceps operation having ever proved fatal to the mother; and since the year 1817, from which period he has kept notes of all the principal incidents of his own practice in and out of that institution, he can speak with confidence that such a result has only once occurred either in his public or private practice.

1. Upon the whole, therefore, the author is inclined to the opinion that it cannot be absolutely necessary to have recourse to the use of the forceps or the lever more frequently than once in three hundred, or at most in two hundred and fifty cases, in order to ensure for puerperal women the greatest possible advantages attainable from the employment of these obstetric powers.

2. In submitting the above proportions to the candid consideration of his professional brethren, as being in his judgment calculated to furnish much safer principles than those of Dr. Burns for the guidance of the general body of obstetric practitioners in this country, he begs to be distinctly understood, that he does not presume to maintain, that a certain select number of that body may not be competent to use the forceps or vectis even once in fifty or sixty cases, after the manner of Professor Nägele, without incurring any material risk of injuring the persons of their patients. Upon looking over some of his midwives' delivery-books, he finds that he used the forceps nine times in eight hundred and thirty-six cases; and he has the evidence of a most distinct tabular

entry, that no untoward symptoms succeeded to such interference in any one instance.

3. If we suppose the forceps to be often used as a mere auxiliary to assist in overcoming local or temporary difficulties, or in cautiously effecting the dilatation of rigid parts, and not systematically to be kept in application until the delivery of the whole head is accomplished; it is evident that such a limited use of them may be had recourse to with much greater frequency than if we suppose a rigid adherence to the opposite but very common practice.

4. Much of the danger incident to the use of obstetric instruments may be considered as fairly attributable to the ill-adapted construction of a very large proportion of those implements as they are furnished, from year to year, for general sale in the London market. There are scarcely two houses in this trade in the whole of the metropolis, that could produce correct specimens of the forceps represented in pl. XXXII., though they all profess their most perfect competence to execute orders for them. This evil may perhaps be, in some degree, to be ascribed to the influence of a silly sort of affectation which has prevailed during the last thirty or forty years, amongst a certain class of writers and teachers, of treating the entire subject of instrumental midwifery, and especially its mechanical implements, with too little consideration, if not sometimes with contemptuous indifference. Hence we have forceps of all conceivable forms displayed in the shops of surgeons' instrument-makers, and of course purchased without due discrimination by students and inexperienced practitioners, from those of Assalini, which may be easily demonstrated to be the very worst specimen of a pair of obstetric forceps that have ever been introduced into the art, to those of Osborn and Hamilton, which, if well constructed, are liable to fewest objections; and yet we have authors of very modern date, who have had the hardihood to assert, that the particular form of an instrument, giving to this expression necessarily a very large meaning, is a matter of trifling importance to the success of an operation. Loose and incautious representations of this kind cannot well fail to excite the suspicion of a defective competency, on the part of some of these gentlemen for the function which they were then assuming, of giving instructions to others.

5. The reader is already apprised of the author's opinion, that instrumental midwifery has not hitherto possessed a sufficient variety of forceps to ensure the utmost attainable safety to its operations. It is well known that the hand, when properly adapted to its objects, is a much safer obstetric instrument than any implement that can be made of steel. This superiority is chiefly to be attributed to the soft texture of the integuments with which our hands are covered. The consideration of this fact has very naturally suggested the advantage of covering the blades of the common forceps with an integument of very thin and soft leather. But for some of the purposes of these instruments, the very slender covering of prepared calf-skin commonly used in such cases is not sufficient to afford all the protection to which the principle of guarding the naked steel, pro-

perly extended to its application, is capable of attaining. Hence some of the blades of the author's forceps have certain portions of their convex surfaces, especially those parts which might be called their shoulders, padded with a layer of soft flannel, in addition to the leather with which they are afterwards covered. It is evident that these are the parts of the instrument most liable to impinge painfully and injuriously against the structures lining and partly forming the outlet of the parturient passage. But by the contrivance here suggested, much of the contusion which they would otherwise be apt to produce may be prevented. The padding, which by means of a few additional threads of fine yarn fastened delicately with a needle to the layer of flannel, is made of considerable thickness at the shoulder parts of the blades, marked n, in fig. 2, pl. XXXII., is then continued along the convex surfaces of the frames of the instrument as far as where the blades begin mutually to converge at m, where it ceases to be so distinctly felt. The same simple contrivance may also be easily adapted for furnishing a soft lining to the INTERNAL or concave surfaces of the same or of other blades of instruments of this class. The principal objection that can be brought to bear against these appendages to the forceps, is the accession of bulk which the additional materials cannot fail to give them. The validity of this objection is readily admitted in many cases, where padded instruments might be found inapplicable; but on the other hand, it is notorious that we have frequently to use the forceps to assist tedious labours, to change unfavourable positions of the fœtal head, and for other purposes not at all connected with defective capacity of the pelvis. The covering of these instruments in the way here suggested, will be found not quite so easy as the common method, but still, with a little additional management, it will be found very practicable.

6. In all cases of doubt as to the amount and actual sufficiency of space within the pelvis, for the eventual accomplishment of a living birth, it should ever be considered a duty of the strictest obligation, on the part of the obstetric practitioner, to give the fœtal subject the full benefit of a cautious trial to effect the delivery with the forceps or the vectis, before he could be justified in having recourse to the use of the perforator.

7. The slipping of the forceps over the head of the child can, in the author's opinion, never happen without exposing the subject of the operation to the risk of personal injury; nor without reflecting SOME discredit on the qualifications of the operator for this department of his duty. In the writings of foreign authors, both French and German, we constantly meet with examples of this untoward accident; and however kindly or candidly disposed we may be to impute its great frequency more to the objectionable form, and especially to the inadequate curvature, of their forceps, than to the exertion of inordinate extracting force; yet the magnitude of the evil is not, on that account, the less deplorable. Have we not a right to call upon those gentlemen to lay aside their national prepossessions, and to examine, with a calm and truly professional impartiality, the pretensions of certain varieties of English forceps, which they

might use with much more safety to their patients than their own, and really with much greater certainty of effecting all the objects of such instruments, without exposing the parties interested, whether the patient or the operator, to the extreme mortification and inconvenience inseparable from the accident of the slipping of the forceps?

8. But it is greatly to be apprehended that the slipping of the forceps is, upon the whole, not unfrequently to be ascribed to the use of too much extracting force. Dr. Jean Frederick Lobstein, physician to the obstetric department of the civil hospital at Strasburg at the period when the facts about to be stated occurred, has published the history of an operation with the forceps, in which the instrument is represented to have slipped FOUR TIMES. One of the consequences of this violence is stated to have been obliteration of the orifice of the uterus. But the patient survived, and recovered slowly and imperfectly, for the time. The case is dated October the 15th, 1809. It was the patient's first labour. She was twenty-nine years of age. Leroux's Journ de Méd. tom. xxxvi. p. 150.

In describing another case, or probably that of the same woman at another time, M. Lobstein observes that the application of the two branches of the forceps offered no difficulty; although the principal part of the child's head was yet above the brim of the pelvis. But its extraction was attended WITH VERY GREAT DIFFICULTY, and could only be effected by the united strength of two persons pulling together, and respectively at the two hooked handles of the forceps! The infant, which was a female, was brought away dead. It had experienced a trifling solution of continuity in the integuments of the head, from the first incision which M. Lobstein had made into the uterus. Its weight and dimensions were those of a child completely at its full time. The woman had an extremely good recovery. Id., vol. xxxvi. p. 156. The case which gave the celebrated Smellie the first idea of lifting up the fœtal head in the pelvis, for the purpose of being better able to rectify its position, may admit of being very properly quoted as an example of great excess in the use of extracting force with the forceps. "The patient being placed as stated in collection xxv. no. 1, case 1, I introduced the forceps along the ears, holding the handles when fixed towards the vertex, which was to the right side of the os coccygis. Then I began to pull from side to side, by which means the head advanced a little, but not so much as to allow the forehead to turn out below the pubes. In repeating these efforts, the forceps slipped off three times; though I did not observe till afterwards that one of the blades, BY GIVING WAY, was the occasion of their slipping off the head." See also collect. xxvii. no. 2, case 4, where we have a similar example of an excessive use of extracting force with the forceps. "As the resistance was great, I gradually increased the force, and though the forceps slipped several times, I at last delivered the head by grasping the handles more firmly, and pulling up towards the pubes. But the perineum was torn by the sudden delivery; because I did not then know how to make the

proper turns, and proceed in the slow and cautious manner which I have since adopted."

9. The accession of an obstinate diarrhœa soon after the consummation of severe labours, whether instrumental or otherwise, may, with great reason, be apprehended to arise from an inflamed state of the mucous membrane of the rectum, and to indicate a dangerous degree of contusion of the recto-vaginal septum. See, in illustration of this fact, Perfect's 33rd case, vol. i. p. 202, where the forceps would seem to have been perfectly well applied, but their application probably too long delayed. "The child appeared to have been dead some hours." "On the fourth day after the delivery, the lochia were obstructed by a violent diarrhœa, which had attacked the patient on the preceding day, and weakened her so much, that she spoke with difficulty, and scarcely breathed: she had cold clammy sweats, and was delirious; so that her neighbour pronounced her at the last extremity." By the injection of an enema, consisting of rice-water and electuarium e scordio, every four hours, and other measures of treatment, the author concludes his case with stating, that "on the next morning the lochia appeared afresh, the diarrhœa abated, the delirium went off, and, except weakness, a nervous tremour and sinking, she was in a fairer way of recovery than ever could have been imagined." See again the 55th case of the same author, vol. i. p. 311. "In this position of affairs, thinking it both difficult and dangerous to attempt the turning of the child, and that it was not in nature's power to accomplish her own work, the pains being insufficient to push the head forwards; and considering also that its position was too disadvantageous for the use of the straight forceps, I resolved at once to make an attempt with the long curved forceps." The operation is represented as having been performed with great caution. The child was born alive, and it lived in a languishing condition till the morning of the sixth day after its birth, when it died. "The forceps had left marks upon the head, and appeared TO HAVE BEEN FIXED IN A DIAGONAL DIRECTION posteriorly over the forehead, and anteriorly over the occiput. I WAS SO MUCH FATIGUED WITH THE TROUBLESOME CIRCUMSTANCES OF THIS CASE, THAT I DID NOT RECOVER FOR SOME TIME. The woman seemed to be in a good way, though rather weak for several days: but from a violent agitation of mind, on the seventh day after her delivery, she was thrown into A DIARRHŒA, attended with a fever, which proved fatal." See also Smellie's Midwifery, col. xxvii. no. 2, case 6, where the author publishes a case communicated to him by a friend, which the reader will not fail to recognise as being peculiarly apposite to the author's present purpose. "The head was felt to be very large. The forehead was to the right side." Dr. Smellie's correspondent "introduced the blades of the short forceps, which were covered with leather; but being afraid that the handles were too short, he brought these out, and introduced a longer kind UNCOVERED, which was the kind he used when he attended with him. After he had fixed these properly, he tried several times, in vain, to bring the head

lower. Upon which he resolved to give up that method, and to open the head. Finding, however, that the forceps did not slip, but kept a firm hold, he resolved to try, and make one effort more, and after PULLING WITH ALL HIS STRENGTH, and moving the handles of the forceps over the pubes, he got the head delivered; yet not without bending backward that blade of the forceps that was next to the pubes. The patient was delivered of a dead child about noon. In the evening she seemed to be in a good way, and in a breathing sweat. NEXT MORNING she was attacked with a VIOLENT LOOSENESS, which was restrained with opiates: but that evening she was comatose, and on the following morning she expired. He supposed the last bad symptom was occasioned by their giving her, without his knowledge, half a pint of rum at two draughts."

10. Amongst the other consequences of extremely violent labours, the author has met, at distant periods, with two examples of acute and fatal purpura. In the former, it was his opinion that instruments had been indicated some time before the delivery took place; but they were not used. In the latter, as far as he could learn from the history of the labour, they had neither been used nor indicated. But the purpura supervened among other effects and symptoms of inordinate vascular action; for want, as it appeared to him, of sufficient activity in the way of depletion during the labour.

11. Is not the fever, usually called puerperal ephemera, to be considered as sometimes a consequence of contusion of the uterine and vaginal structures, from instrumental and other varieties of artificial labours? See Perfect's Cases, vol. ii. p. 84, case 84.

12. Should the use of the forceps be had recourse to for expediting labours supposed to be retarded by an unusual brevity of the umbilical cord; whether originally too short, or rendered so by being coiled round the neck of the child? This cause of protracted labour may be suspected to exist when there is great recession of the fœtal head, immediately consequent upon every expellent effort of the uterus. If the forceps be not used, the child may generally be expected to lose its life from too long a duration of the labour, added to a moderate degree of strangulating pressure, during a great part of that time, to which its jugular vessels can scarcely fail to be exposed. The mother will also, on her part, have to experience a very hard labour, but generally without having her life implicated in any serious danger. If, on the other hand, we have recourse to the use of the forceps in such cases; the child, unless we suppose the delivery to be effected with great rapidity, will be equally liable to lose its life from a still greater strangulating pressure upon the vessels of the neck: inasmuch as the practitioner might often unconsciously, and almost unavoidably, make efforts to draw down the head in the absence of propellent action of the uterus; which would necessarily put the cord very tensely on the stretch. It might also be presumed that giving much artificial assistance in cases of insufficient length of the umbilical cord might not unfrequently

become the occasional cause of hæmorrhage; from its obvious tendency to produce a premature detachment of the placenta from the uterine surface. The author has used the forceps on several occasions in the circumstances here supposed. In one case, hæmorrhage immediately followed the delivery, and the child was still-born. In the second, the child had suffered fatal strangulation; but in the third, the fœtal life was not quite extinct, and, with some little management for its resuscitation, the child began to breathe in about five minutes after its birth. All the mothers had good recoveries.

13. Head cases, with a hand presenting, together with the head, may be successfully treated by the forceps; although it should be added, that operative assistance of any kind will rarely be required in such cases. Such an operation, however, when necessary, should be conducted with the greatest caution, and with the utmost possible attention to the mechanism of natural birth. The instrument best adapted for its performance would be one of the varieties of the forceps with blades of unequal length, represented in plate XXXIX. The short blade should be applied on the side of the pelvis occupied by the child's hand. See Baudelocque's Midwifery, note on § 1522.

14. Operations with the forceps are seldom performed so early in a labour as to ensure perfect freedom from the risk of subsequent reaction; even if we were to suppose that instruments of this class could always be used without materially increasing that risk. Hence the treatment of puerperals, under these circumstances, is usually a duty of much more than ordinary magnitude and responsibility. If the labour shall have been one of considerable severity and duration, before the decision to have recourse to artificial assistance is taken, and then the delivery is effected, not without some difficulty, we might generally calculate on the subsequent accession of a smart symptomatic fever. Now it cannot be doubted that a fever of this description would have for its principal and proximate cause a state of great tenderness, approaching to that of contusion, or a highly inflammatory condition of the structures within the pelvis and the lower parts of the abdomen. But such a condition of the tissues in question could not be allowed to continue long, and perchance to increase rapidly in violence, without exposing the patient to very serious danger. Should therefore the high-toned fever, usually attendant on severe labour, not subside in the course of a few hours after a delivery with the forceps, the practitioner would have much reason to be anxious about the ultimate consequences of his case; and, at all events, he would have no time to lose in trifling and temporizing practice. On the contrary, he would have forthwith to reduce the excessive vascular action by ample bleeding; to empty the rectum by an oily and demulcent enema; and, as soon as possible afterwards, for the further reduction of the constitutional irritation, to place his patient under the full influence of opium; which it would be generally proper to combine with a saline diaphoretic. After causing the vagina to be well cleansed with an injection of warm water, it might be of the greatest use, in many cases, to order the whole

of that passage to be charged with a thin, soft, linseed-meal poultice. This duty, for an obvious reason, would be best performed by the practitioner himself. The poultice should be withdrawn every six or eight hours, in order to give a free exit to the lochial discharge. On all these occasions, the syringing of the vaginal passage with abundance of warm water should not be neglected.

It need not be added that due care should be taken not to expose the patient unnecessarily, during the performance of these troublesome but to her most important services, to the action of cold.

15. In the undertaking and performance of forceps operations, the operator should on no account, even for a moment, suffer himself to forget the comparative value respectively of the lives that are intrusted to his disposal. A French writer, of a few years' standing, once indulged in very flippant remarks on the proportions of embryotomy and forceps cases, published by Dr. Bland, in his tabular reports of the Midwifery Practice of the Westminster Dispensary. The answer is, that in all the forceps, or rather vectis cases of Dr. Bland, the mothers SURVIVED and RECOVERED. The same it is believed is the result generally of the operations with the forceps, when performed by the more responsible midwives of this city. But what are the results of forceps operations in the practice of the great obstetric institutions of the French metropolis? Without attaching all the confidence, to which no doubt many of them are well entitled, to certain private reports, which from time to time we receive on these interesting topics, we are at least fully entitled to appeal to such documentary evidence, as to the results of the obstetric practice of our ingenious neighbours, as they have themselves thought proper to publish for the perusal of all the world. In a work lately published in France, which professes to give a detailed account of the most interesting cases which have occurred in one of the principal Lying-in Hospitals of Paris, entitled "Pratique des Accouchemens etc. par Madame La Chapelle, sage-femme en chef de la Maison d'Accouchement de Paris," the authoress has given particular histories of upwards of ninety forceps cases. Of these more than ninety cases, nineteen are positively stated to have proved fatal to the mother! What can be the motive of the French government, in committing the precious lives of so many of their poor countrywomen so entirely to the incompetent hands of female practitioners in midwifery? It surely cannot be right that women should be intrusted with capital surgical operations, even on other women.

16. A hooked instrument should never be employed as a substitute for the forceps or the vectis, in cases of head presentation. This observation is meant of course to imply that the case to be treated is one of a character not to require the sacrifice of the child's life as an essential condition to the preservation of that of the mother. The moral obligation of this rule is, indeed, so self-evident, that any formal declaration of it might seem totally unnecessary. Since the publication of the author's Elements of Operative Midwifery in 1825, he has great pleasure in believing that it has not often been, if ever once, positively violated.

### OF THE OPERATION FOR INDUCING PREMATURE LABOUR.

In the present article it is purposed to notice very briefly two modes of management not hitherto treated of, which the humanity and ingenuity of modern times have suggested for effecting the delivery of a certain class of unhappy women, the subjects of an unfavourable conformation, compatibly with the preservation of their own lives and those of their offspring. These consist in the performance of two operations: the one a very simple procedure to effect the induction of premature labour; and the other that of dividing the symphysis of the pubes.

Of the former of these operations, the idea was entertained by some of the more eminent practitioners of this metropolis as early as the middle of the last century. See Denman's Introduction to the Practice of Midwifery, chap. xii. sect. 10. It was first performed by Dr. Macauley, upon the wife of a linen-draper in the Strand, and it proved perfectly successful. From that period however till towards the close of the century, it remained, with very occasional exceptions, a subject only of professional curiosity and conversation. For the last thirty or forty years, however, it has been often performed in this country; not only in London, but also in other principal cities and towns of the kingdom. When instituted simply on account of deficient capacity of the maternal pelvis, it has been almost always followed by recovery of the mother; whilst, in the proportion of one-half of the whole number, it has also proved the means of preserving many hundreds of children, whose lives must otherwise have been unavoidably lost.

The original object of the operation for inducing premature labour was to enable a woman, having too small a pelvis for the birth of a child at the full period of gestation, to be delivered at an earlier period of a living child of immatured dimensions; but, nevertheless, of a child sufficiently developed to be competent to maintain after its birth an independent life. It has however since that period been had recourse to as a means of saving the lives of women become the subjects, at advanced periods of gestation, of alarming uterine hæmorrhages and other dangerous complications of pregnancy.

The principle of this latter indication is obviously capable of being indefinitely extended for the benefit of pregnant women, whenever and from whatever cause their lives may be implicated in danger; provided, indeed, such cause might be removable by the induction of a premature labour. The mode of performing this operation should have regard to the circumstances in which it is performed, and the objects for which it is to be had recourse to. If it be the intention to induce labour prematurely on account of defective capacity of the pelvis, it will in many cases be preferable not to perforate the membranes, but to effect the dilatation of the orifice of the uterus with the finger, gradually or by successive attempts without rupturing the membranes; and by that means to dislodge the viscid mucus by which nature plugs it up during gestation. This simple

procedure, together with the separation of the membranes for the space of a few lines within the uterine orifice, is often sufficient to superinduce the action of labour; though in more than one instance the author has experienced disappointment as to that result. The method of performing the operation with the finger was first suggested and adopted by the late Mr. Jacob Jones, of Finsbury-square. It was performed, for the first time, and in peculiar circumstances, by that gentleman on St. George's-day, THIRTY-SEVEN YEARS AGO; and it has occasionally ever since been had recourse to under similar circumstances, by Dr. Sims and other leading practitioners of this metropolis.

If the gestation be supposed to be far advanced, and it be an object to ensure the accession of labour speedily, it would be advisable to perforate the membranes at once with an instrument; with which, however, there should be made but a very small aperture. The author's instrument for this purpose is a steel wire of about ten inches in length, and one-twelfth of an inch in diameter, affixed to a small wooden handle, of about three inches in length, to give it firmness of purchase; and gently curved at the point, that it may glide easily along the directing fingers towards its ultimate destination. The reader may see it represented in pl. xxxv. B. fig. 2. An aperture through the membranes, as small as may be made by means of this instrument, will admit of little more than a dribbling of the liquor amnii; and therefore it may be many hours or possibly a day or two, before the uterine contractions may fully declare themselves. Hæmorrhage, and other alarming circumstances, may require the emptying of the uterus of its liquor amnii all at once, or, at all events, in a very short time. In that case, a long female catheter will supply the best instrument for the performance of this duty; as it will serve equally for a perforator for effecting the rupture of the membranes, and for a canula for quickly discharging the waters of the ovum.

The operation for inducing premature labour, on account of confinement of pelvis, belongs of right to our first class of instrumental deliveries; it being considered as compatible with the preservation of the lives both of the mother and the child. Its proper objects, in reference to this indication, are women having only a moderate confinement of the pelvis; its capacity being supposed sufficient for transmitting a child of seven or eight months' growth; but too small to admit of a living birth to a child of the ordinary bulk and dimensions at the full period of gestation, even with the assistance of the forceps. When, therefore, a female of such a conformation shall have had one or more dead children from this cause, she should become the subject, in her future pregnancies, of this valuable operation. The precise time for its performance should depend on the supposed deficiency of capacity of the pelvis. If we suppose the smallest diameter, in any part of the pelvis, to be less than three inches, then the operation should be performed in the eighth month; and more or less early in the month, as that diameter is presumed to vary between two inches and three quarters and three inches. On the contrary, if the short diameter is known, or

upon good and strong grounds suspected, to EXCEED three inches; it might be competent, on the part of the practitioner, to defer the operation till the first or second week in the last month of gestation; and then to perform it in such a way as to ensure the accession of labour in the most gradual and natural manner possible. The operation for the induction of premature labour is unquestionably a capital improvement in the obstetric art; inasmuch as it furnishes the means of saving the lives of many children, not only without any increase of risk, but with a great reduction even of the chance of danger to the lives of the mothers. It is in one sense indeed truly observed by Dr. Denman, that the objects of the operation are circumscribed within certain limits; viz., those of a mere sufficiency of space within the pelvis to admit of the transmission of a living child of seven or eight months' gestation, but not sufficient to admit of a living birth at the full period.

It must however be a matter of great satisfaction to know, that of the entire number of pelves, distorted or otherwise, too small to admit of the birth of living children of standard size, at the full period of gestation, a very large proportion, a majority it is apprehended at least of two-thirds, will be found to belong to the class of lesser degrees of confinement, and therefore entitled to be included within the limits prescribed by Dr. Denman, as fit subjects of the operation for the induction of premature labour.

### ON THE OPERATION OF DIVIDING THE SYMPHYSIS OF THE PUBES.

This operation on the human female was first performed upon a person of the name of Souchôt, the wife of a French soldier, on the 30th of September 1777, by M. Sigault, a surgeon of Paris: for I think there is no sufficient evidence that it was performed either by Galen or by Severin Pineau. See an explanatory and historical extract on the subject of Sigault's case from the Registry of the Faculty of Medicine of Paris, in the Journal de Méd. etc., tom. xlix. p. 127. The operation of dividing the symphysis of the pubes was proposed as an important accession to the art of midwifery, as a means of saving both mother and child in cases of confined pelvis, and as a substitute for the more desperate and so frequently fatal operation, the Cæsarean section. It has been performed with various success in several countries of Europe, from the date of its first promulgation, till within a very short period of the present time. It has been most successful where, probably, it was perfectly unnecessary; whereas, in cases of actual difficulty it has seldom answered its proper indication, that of saving the lives both of the mother and her offspring. Where the confinement of the pelvis is considerable, it yields too little additional space to admit of delivery being certainly effected without reduction of the child's bulk by the further operation of cephalotomy; and when only doubtful or very moderate, it would often be impossible to come to a positive conclusion as to the expediency of this or any other operation, before it might be too late to ensure the preser-

vation of the child's life. From its great danger even to life, and the deplorable infirmities which it has so often entailed upon its subjects when it has not proved fatal, the Sigaultean operation has now fallen into almost total desuetude. In this country it has been performed only once; and in that instance it proved quickly fatal both to mother and child. Simmons's Lond. Med. Journ., vol. xi. p. 46.

### OF OBSTETRIC OPERATIONS CALCULATED TO ENSURE THE PRESERVATION OF THE MORE IMPORTANT LIFE OF THE MOTHER.

In cases of so much confinement or distortion of the pelvis as to make it incompatible with the birth of a living child by the natural passages, at any period of gestation sufficiently advanced to derive advantage from the operation for the induction of premature labour, the next resource of our art is to reduce the bulk of the child by an operation, or a series of operations, necessarily fatal to its life. The head, when naturally proportioned to the rest of the body, is, it is well known, the most bulky part of the child; and, therefore, this is the part which most frequently becomes the object of the distressing operation of which we have now to treat. We have already seen that the fœtal skull consists of several different portions of bone connected together by softer tissues, in such a manner as to admit of its being moulded into diverse forms, and shortened or elongated as to its several diameters, by the pressure made upon it by the uterus and other parts concerned in the labour. From the operation of the same pressure, the part immediately presenting is put tensely on the stretch; and when deprived of its natural strength and firmness by the previous death of the child, it has been known occasionally to have suffered a spontaneous laceration; the integuments of the head and the linings of the skull giving way together, so as to admit of the sudden escape of a part of the brain, and immediately afterwards of sufficient collapse of the entire fœtal head, to render its effectual transmission through the pelvis by the natural agents of labour mechanically practicable. Inasmuch however as this result has only very rarely occurred, and in the circumstances here presumed both mother and child might generally be expected to perish in the dreadful struggle, it has for many years been the established practice of this country, in these most deplorable cases, to ensure the preservation of the more valuable life of the mother; by effecting, artificially, what nature has occasionally, though confessedly very unfrequently, been able to accomplish in her own behalf.

The head being by far the most bulky part of the entire fœtal subject, and the head being also, in a great majority of cases, the presenting part; it is usually found necessary only to perforate the skull, in order to ensure the delivery of the whole child. The operation consists in making an opening into the presenting part of the head, sufficiently ample to admit of the escape of a considerable part of the brain upon the further application to the head, either of

expellent or extracting force. The aperture may be made with any kind of pointed instrument. Some practitioners have accordingly used pointed knives, and others long and pointed scissors. The late Dr. Denman introduced an instrument for this purpose which he called a perforator. Without cutting edges, it yet bears a considerable resemblance, as to its general appearance, to Smellie's scissors. That is the instrument which is now in general use in this country; and simply for the purpose of making the aperture in the fœtal head, nothing certainly can be better adapted. It effects this object however neither sooner nor more safely than a pair of scissors of proper construction. The author therefore, in his own practice, prefers the scissors, because with that instrument, and not at all conveniently with the perforator, he is able with the greatest facility to effect the reduction of the brain and its membranous involucra into small portions. The length of his scissors is about eleven inches; from the joint to the points they measure two inches, and from the stops to the points one inch. The blades are a little curved, in order to ensure their gliding readily along the palm of the hand and the conducting fingers of the practitioner. The scissors or any other kind of perforator should be sufficiently strong and well tempered, not to bend when being introduced into the skull.

The perforation of the head with an instrument of this kind can be considered no other than an easy operation. It is generally advised to insinuate the point of the instrument into a suture or fontanelle. This, however, is a matter of no great consequence. On account of the mutual overlapping of the bones and great protrusion of scalp, it may in many cases be difficult to find either a suture or a fontanelle. If the instrument be sufficiently strong, and the hand steady, and guided by a competent knowledge of the axis both of the pelvis and of the uterus; it will be found a preferable procedure to transfix the head in the very centre of the presenting part. Having accordingly conducted the point of the scissors to the part in question, and given it a moderate degree of fixedness, resting it on the integuments so as nearly to reach the skull; a finger of the left hand should then be passed up to ascertain, by feeling carefully the whole of the presenting part, whether the instrument is in a direction to correspond precisely with the axis of the fœtal head. That point being duly ascertained, the scissors are to be cautiously driven into the cranium by a boring action as far as the stops; and then to be very carefully but widely opened; the utmost caution being to be used that no part of the external edges of the blades shall impinge upon and cause contusion of the uterus or other soft parts situated within the pelvis. This extension of the blades of the scissors is to be made in the direction of the transverse diameter of the pelvis, or rather in that of the actually longest diameter, whatever might be its direction. At this stage of the procedure, it has been advised by some partially to withdraw the instrument; to introduce it again in the reverse direction, and to enlarge the first aperture by opening the blades at right angles with the first extension; so as to make a large crucial laceration of the skull and scalp. In many cases, this mode of operating may be adopted with perfect safety; but in all cases of

great confinement of the pelvis, it will be better not to run the risk of injuring any of the soft tissues by opening the instrument widely in the direction of the short diameter; and, indeed, if care be taken to divide the brain into small portions, as has been just intimated to be the author's practice, the crucial extension of the scissors or perforator may be perfectly well dispensed with.

A sufficient opening being made in the head, a part of the brain may be expected to be forced through it, by the bearing-down action of the uterus; and that action continuing vigorous, the child's head will undergo a gradually increasing diminution of its bulk; and eventually the whole of the fœtal subject will very probably be expelled without any further assistance of art.

It may here be expected that we should notice a rule of practice which some authors have founded upon a knowledge of this principle, viz. that of surrendering the required compression and the collapsing together of the child's head, to be effected solely by the natural efforts of the uterus and its auxiliary propelling organs; these being considered adequate to the finishing of the labour even in cases of considerable difficulty, after the previous measure of opening the fœtal head shall have been premised. But the practice which this doctrine would lead to, might in many cases be very inconvenient, if not dangerous. It is seldom that operations of this kind are performed, or ought to be engaged in, excepting at an advanced period of the labour; and until the patient shall have endured considerable sufferings, and the natural powers of the function shall have been greatly reduced. But in such a state of things, does it seem probable that any substantial advantage could be derived from further delay; provided, indeed, the delivery could be forthwith effected by art, with equal or even greater impunity to the tissues and functions of the maternal organs? Not to add that, protracted labours of the description which we are now considering, become sometimes suddenly complicated with the most dangerous symptoms and incidents; such as require the earliest possible delivery, as an indispensable measure, even to afford a remote chance of saving the patient's life.

The next step therefore in the accomplishment of these untoward labours is, what has been usually called, from the frequent employment of hooked instruments to effect it, EMBRYULCIA. The presenting part of the cranium having been perforated, and the cavity of the skull partially emptied of its contents; the fœtal head will then in a large proportion of cases collapse, as already observed, into a considerably reduced bulk: and if the parturient action of the uterus be yet vigorous, the remaining part of the labour will often be speedily and safely accomplished without further assistance.

In the case, however, of a pelvis somewhat more distorted than we have now supposed, or otherwise defective in capacity; or on account of a reduced state of the natural powers, or of the accession of untoward and alarming symptoms from whatever cause; it may sometimes become highly expedient in the progress of the labour, to have recourse to the use of extracting instruments. This class of instruments is of two kinds, viz. hooks and forceps; or of varieties

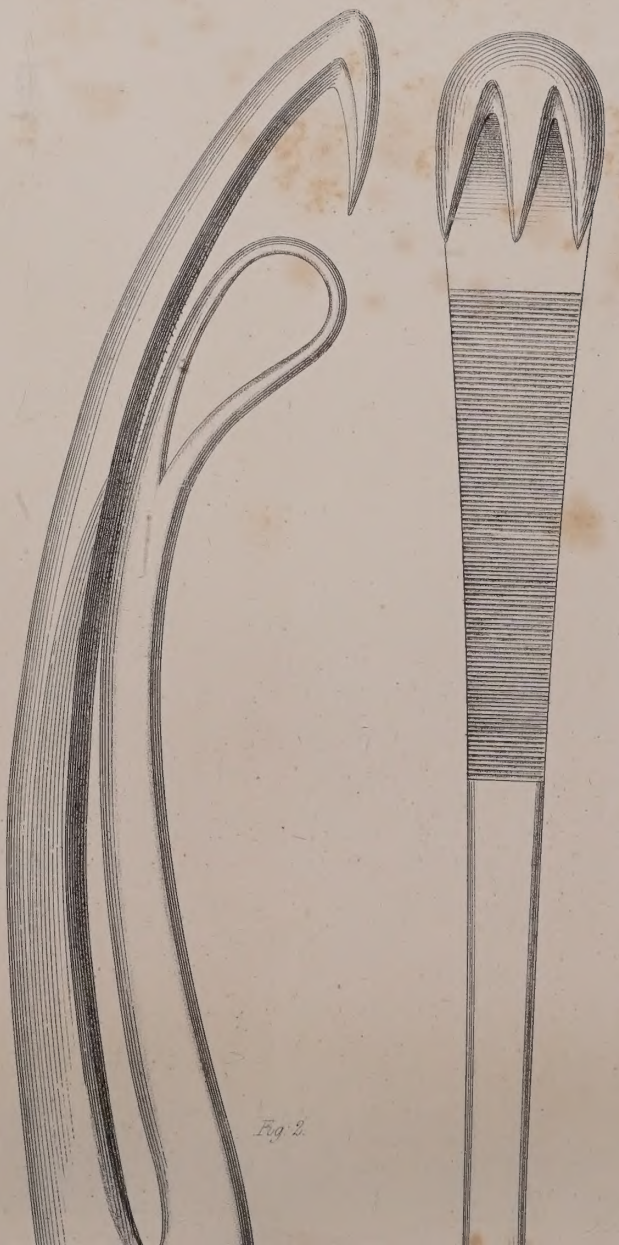
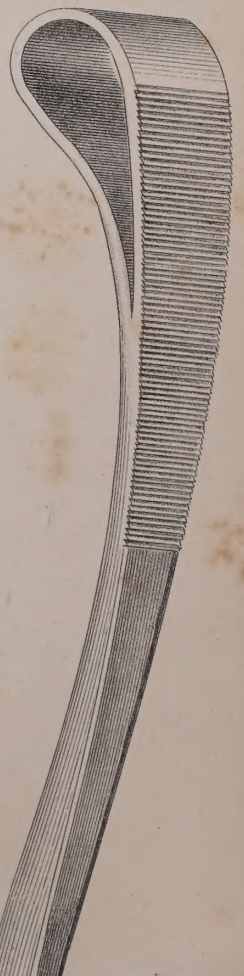
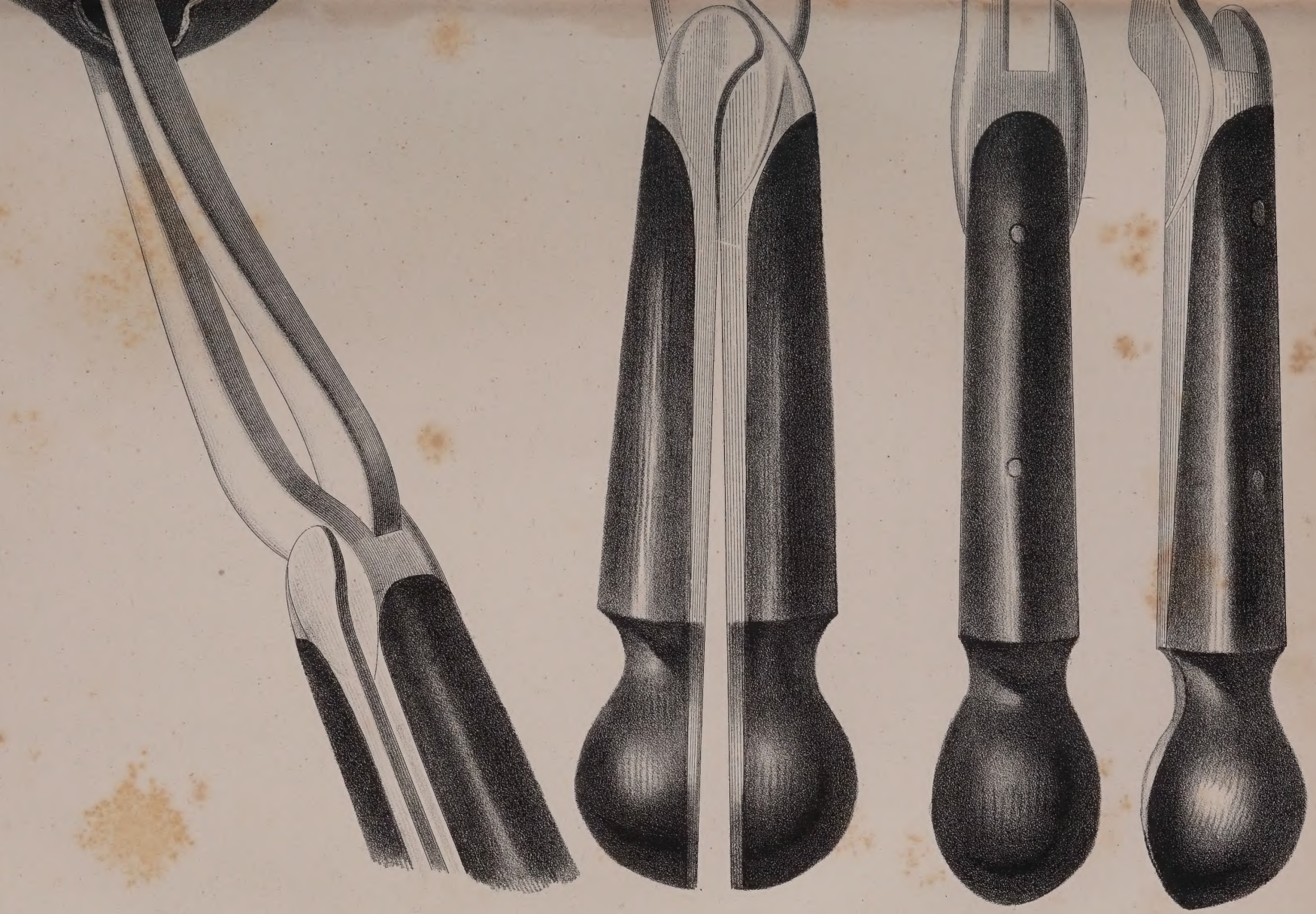


Fig. 2.





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of other more complex pieces of mechanism founded on combinations of these principles.

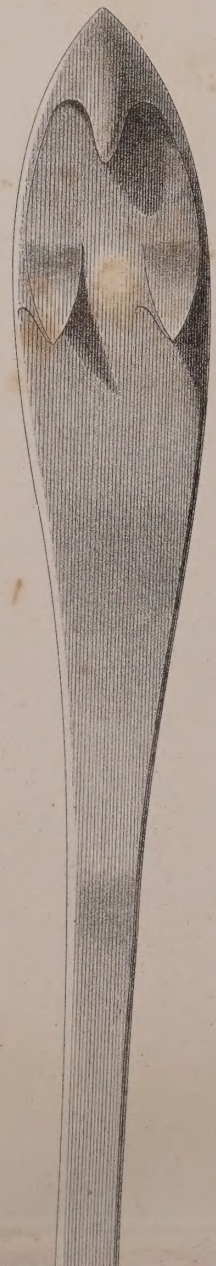
### OF EXTRACTING INSTRUMENTS FOR COMPLETING THE DELIVERY AFTER THE PREVIOUS USE OF A PERFORATOR.

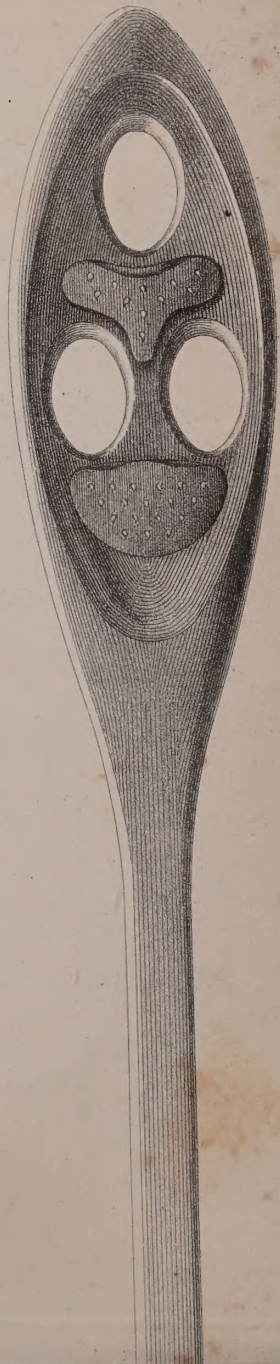
The author has had the honour at different times of submitting to the approbation and use of the profession, what he considered improvements upon the instruments previously known and used for these purposes. The principal distinctive property of the craniotomy forceps, was the separableness at pleasure of their counterparts without any essential sacrifice of power. Notwithstanding the modest claims of a certain pretended improvement upon that instrument, the author considers the separableness of its two counterparts, as one of its most valuable properties; and indeed one which could not be conveniently nor safely dispensed with, in cases which might require the purchase part of the forceps to be applied over a large tract of the fœtal head; the head perhaps in the mean time high up within the cavity, or even above the brim, of the pelvis. It is well known that several of the surgeons' instrument-makers have sold very imperfect specimens of the craniotomy forceps on account of the absence of this separableness of their counterparts. For this reason, and for want of proper dexterity in the use of them, it has been asserted that the craniotomy forceps have sometimes failed in their purchase; although of this it appears difficult to conceive the possibility. To obviate, however, even the mechanical possibility of such an accident, however ascribable to one or other of the above enumerated causes, and to meet the general preference which seems to prevail in this country for the use of crotchets for the performance of embryotomy operations, the author has since published several varieties of guarded instruments of that class. The instrument exhibited in pl. xxxix. figs. 1, 2, 3, 4, is accordingly a specimen of a guarded crotchet intended to transfix the scalp and skull from without. The crotchet part of the instrument is represented in fig. 3. The hook is divided into three prongs, which are intended to enter the head at a little distance from each other; in order to avoid as much as possible unnecessary laceration of the pericranial integuments. This branch of the instrument is to be passed up exactly in the same way as the common crotchet, when applied to the outside of the head, to be guided along the palm and directing fingers of the right or the left hand, according to the intended locality of its destination, and to be applied to the precise point of the head which it is meant to penetrate. The guard part, fig. 4, is then to be introduced into the vagina, and through the aperture made in the head by the scissors or perforator, and passed high up into the cavity of the skull. The two counterparts of the instrument must then be carefully adjusted at the lock. Upon firmly pressing the handles together for this purpose, the crotchet prongs or teeth will enter the fœtal scalp, and upon the application of moderate traction, will enter deeply into the sub-

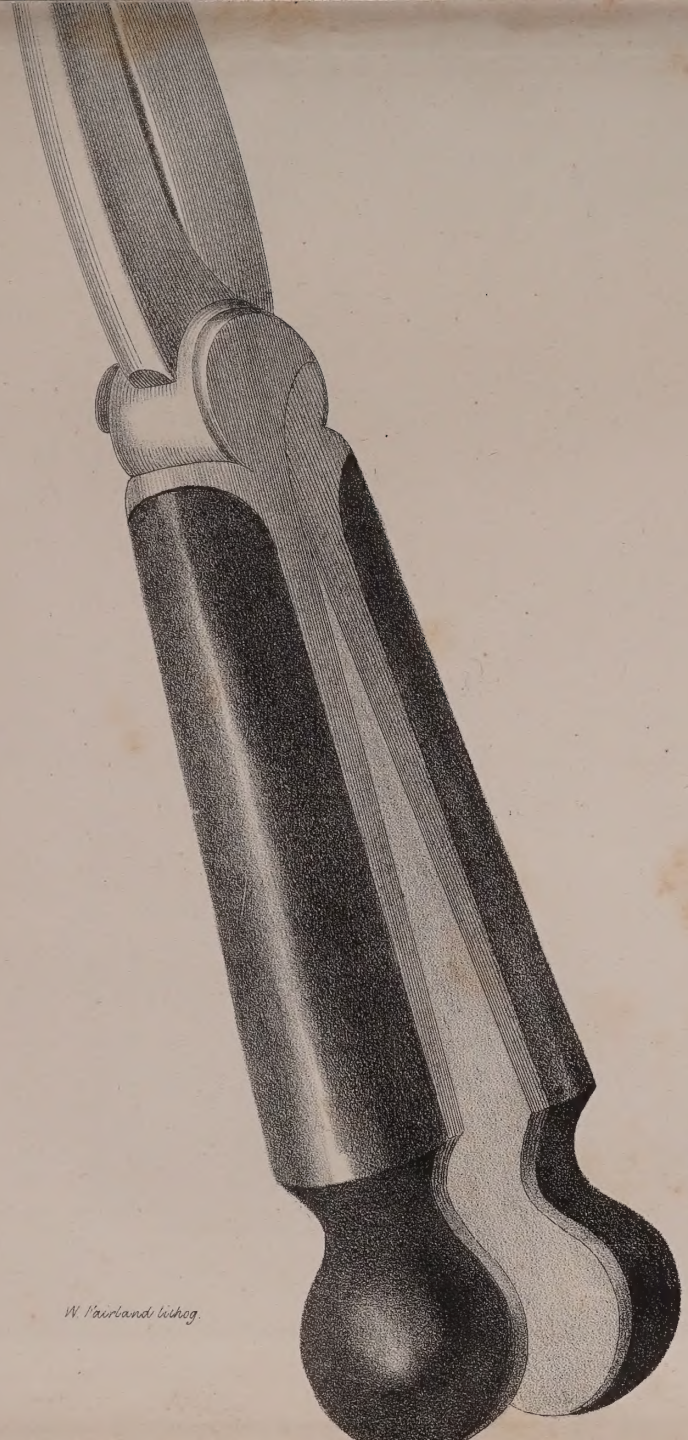
stance of the skull. The handles then may or may not be secured by a tape, at the discretion of the practitioner; it not being so indispensable a precaution in using this instrument as when the craniotomy forceps are used. The first figure in the plate represents a portion of the fœtal head removed for the purpose of showing the mode of purchase of the instrument. The crotchet branch is seen to have been passed up posteriorly and on the outside of the head, and to have penetrated the skull at a little distance behind the ear. The guard part of the instrument is seen to have been passed up through the aperture made by the scissors into the cavity of the skull. The position of the head may be supposed to be that of the forehead and face to the front of the pelvis, but inclining towards the left acetabulum. By the ring aperture in the blade of the guard portion of the instrument, or rather by the relative position of that part of it which forms the ring to the teeth or crotchet, the reader will easily perceive how those teeth must be perfectly protected. Their points being altogether under the level of the guard, it is evident that they cannot by POSSIBILITY come in contact with a single fibre of the maternal organs. From the considerable extent of purchase possessed by the corresponding forceps surfaces of the shanks of the instrument, which in figs. 3 and 4 are represented as being strongly ribbed or fluted on purpose, sudden lacerations of the fœtal scalp and extensive fractures of the bones of the skull are in a great measure avoided. The power of the instrument is such that it cannot fail to act during every stage of its use, in perfect conformity with the intention of the operator, and according to the degree and direction of the force which he finds it necessary to apply to it. Whilst speaking of the power of this piece of mechanism, it may indeed be observed, that some persons have considered it as unnecessarily bulky. The author's answer has always been, that the strength of the instrument is no further an objection to it than can arise from its weight. Its precise weight, however, is one pound and five ounces avoirdupois. The object of so much power is, to provide against the possibility of any accidents which otherwise might arise from the easy bending, or the mere action of the elasticity of either of its branches; which, by the loss of the mutual parallelism subsisting between the crotchet and its guard, would expose the patient to all the risk incident to the use of the common unguarded crotchet. Surgeons' instrument-makers are generally in the habit of making embryotomy instruments much too slight, under the impression, it is to be presumed, that they are more handy and portable, and less liable to the charge of clumsiness; whereas, the first principle of all extracting instruments with sharp hooks or teeth should be, an inflexible firmness of purchase. With an instrument of this kind, it is obvious that a practitioner may use much more power in a given time, and compatibly with the most perfect safety, than he can with any sort of hooked instrument without a guard; inasmuch as he may not only apply more attracting force in the abstract, but vary to a considerable extent the amount and direction of his force, by which he will often very greatly reduce both the difficulty and danger of the operation.

Fig. 1.

Fig. 2.







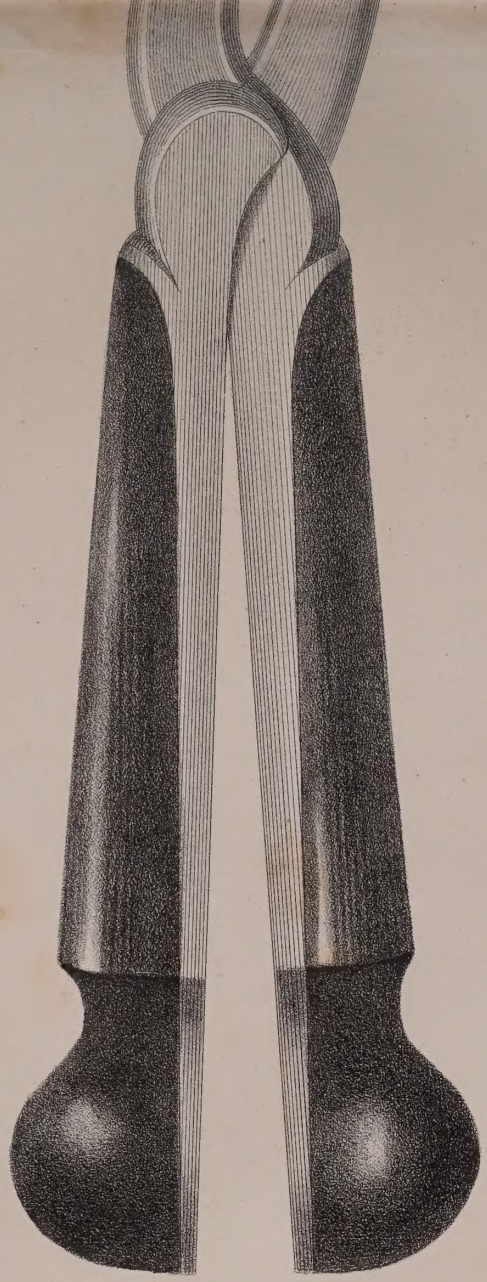


Fig. 3

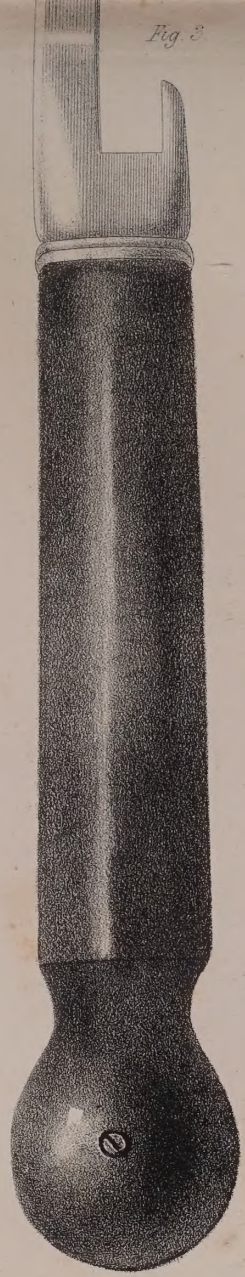


Fig. 4

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The crotchet part of the instrument just described, it has been already stated, is intended to transfix the fœtal head from the outside. But as it has been pretty generally the practice of this country for several years past, to fix the crotchet into the skull from within its cavity; the author has thought it his duty to consider of some method of meeting this general preference, at the same time without losing sight of the security to be derived from an effectual guard. Accordingly, in pl. XL. is represented a guarded crotchet, consisting, as in the former case, of two counterparts; one, the crotchet part, armed, as may be seen in fig. 3, with three stems or prongs, to be introduced into the interior of the skull, and the other to be passed as a guard to it on the outside of the head. The author's motive for preferring a plurality of stems, has been his wish to ensure an ample purchase, with less probability of extensive fractures of the fœtal skull than might be sometimes occasioned by a crotchet armed only with one large stem. A more perfect idea may be obtained of the relative situation of these prongs to the blade part of the instrument, whence they project, from the profile view of them, given in fig. 2, than from the view of them, necessarily fore-shortened, given in fig. 3. They form an angle with the shank of about thirty-five degrees; and, moreover, they are a little curved from the base to the point; their convexity looking towards the point, and the concavity towards the handle. In the shank of this part of the instrument there is a slight bend, in order to make room between the purchasing parts of the two blades for the thickness of the fœtal skull and scalp. The handles and locking apparatus are precisely like those of the common forceps, excepting that they are considerably stronger both as to wood and metal, as an insurance against the possible loss of parallelism between the teeth of the crotchet and the apertures destined to receive them in the guard. The guard is represented with great fidelity and success in fig. 4. The purchase part of the guard is hollowed out in the manner of a spoon, and perforated with three oval holes, so situated respectively as to correspond with the prongs of the crotchet. Between and posteriorly to these apertures are fixed two pieces of steel, which rise from the bottom of the blade a little below the level of its edges. Their surfaces are made rough like those of a rasp. The use of these projections, it may be easily understood, is to apply upon the fœtal scalp a pressure, counter to that made on the skull by the teeth of the crotchet, in order to ensure the penetration of the latter without the possibility of their slipping purchaseless along the smooth cranial bones, or of failure from any other cause whatsoever. The use of the entire instrument is well represented in fig. 1. The head is supposed to be situated relatively to the pelvis, with the occiput towards the front. The aperture is made with the scissors or perforator in the centre of the presenting part. The crotchet part is introduced through that aperture into the cavity of the skull, and applied to the interior surface of the superior and right lateral region of the head. During the introduction of the crotchet, the palm and fingers of the directing hand are made use of, at once to conduct and to guard the teeth of the crotchet in its passage along the

vagina, until its complete entry into the cranial cavity is effected. The crotchet blade having been thus securely lodged within the skull, the guard blade is to be passed up, directed by the same hand, and applied to the corresponding part of the head on the outside. Upon adjusting the instrument at the lock, the teeth of the crotchet will instantly find their proper positions as to their intended correspondence to the guard. After fastening the handles firmly together, and upon using the requisite degree of attracting force, the prongs of the crotchet will immediately penetrate the skull; and, gradually in the further progress of the operation, their points will so far pass through the cranial bones as to reach to the pericranium and scalp, and probably at length to indent the integuments. This effect is strikingly represented in fig. 1. The crotchet prongs, however, should never be so long as to reach beyond nor even quite so far as the external surface of the guard.

### OF THE RULES AND PRECAUTIONS NECESSARY TO BE OBSERVED IN THE USE OF CRANIOTOMY INSTRUMENTS.

1. The operation of craniotomy, necessarily destructive to the fœtus, can never be thought of as a justifiable measure, until all hope shall have been extinguished, of being able to accomplish the birth of a living and unmutilated child by the natural passages, compatibly with a satisfactory degree of certainty of the mother's recovery.

2. To ensure the safety of the mother's life, it is to be presumed that the soft parts must not be exposed to the risk of dangerous contusion from the violence or long duration of pressure upon them; whether occasioned by the natural agents of parturition, or by the use of the forceps or other implements of our art unsuccessfully applied.

3. In cases of doubt as to the eventual competency of the natural powers to effect the delivery, or at least to propel the head of the child sufficiently into the pelvis to be within the safe reach of the forceps, the benefit of such doubt should always be given in favour of time; so long at least as it may be compatible with the absolute safety of the mother to put off the moment of interference. In all estimates however of the probable results of doubtful cases, the practitioner should never lose sight of the important fact, which in this Protestant country is not disputed, that the life of the mother is incomparably more valuable than that of the unborn child.

4. Before we yield finally to the suggestions of a professional expediency so deplorable as that of having recourse to this fatal operation, it cannot be for a moment disputed that we should hold ourselves morally bound to avail ourselves of all other less formidable resources of our art. Under this remark the author may perhaps be permitted to recommend as an essentially preliminary measure, a very cautious trial of the long forceps.

5. The safe and proper use of the long forceps requires, however, as we have

already seen, the union of much dexterity and intelligence. It is a power to be tried for the benefit essentially of the child; but not at the expense even of risk of additional danger to the mother. It may be claimed as a merit of the forceps, with the blades of unequal length, represented in plates XXXVI. and XXXVII., that they are of a form peculiarly calculated to enable the practitioner to apply to the child's head a considerable amount of attracting force, without necessarily exposing the parts at the brim and within the cavity of the pelvis to the risk of injurious contusion.

6. In cases of great confinement at the brim of the pelvis, the gestation at the same time being presumed to have arrived at its full period, the practitioner may avail himself of some latitude as to his choice of the time for making the aperture in the fœtal skull. In the case, for instance, of a pelvis having for its conjugate diameter any measure short of two inches and a half; and that fact being assumed to have been ascertained positively, and beyond the possibility of doubt, by accurate admeasurement; he might then be permitted to introduce his perforator at almost any period of the labour; but generally the sooner and the better after the rupture of the membranes, and after the accession of sufficient development of the orifice of the uterus to ensure the safety of the operation. The rule which has been commonly prescribed on this point, is that of not perforating the head until the orifice of the uterus shall have become widely dilated. In cases however of so much confinement of the pelvis as we are now supposing, the author has never known an instance where the orifice of the uterus became, at any time, dilated to the extent of its full capacity of development in ordinary circumstances. It should be considered, that, as the head of the child in these cases cannot effect its entry into the pelvis by reason of its defective capacity, this natural instrument of dilatation, the fœtal head, is not in a situation to exert its usual dilating power upon the uterine orifice.

7. As a general rule, the crotchet should be so applied as to enable the practitioner to draw down the head in the direction most agreeable to the mechanism of natural birth, and as much as possible in correspondence with its long axis; as also strictly in a line, during every stage of the extraction, with the curved axis of the pelvis. In cases of great confinement, it will be found a most important previous measure to have emptied pretty effectually the contents of the fœtal head. The crotchet and its guard being properly applied and securely fixed at their handles, the practitioner is then to draw down in the proper direction, as already advised, with great caution and firmness He should examine from time to time the perforated part of the head, in order to ascertain that there are no angular pieces or points of bone projecting beyond the integuments; which in the further progress of the operation might chafe and wound the vagina, and which therefore, as soon as recognised, should be carefully removed. The operator must not always expect to be able to complete his operation in a very short time. The perforated and shattered head will always require some time to be pressed down into correspondence with

the size and form of the confined and distorted pelvis, through which it has to pass. In the event however, of several well-directed attractions having been made without apparent effect, it will perhaps be advisable to change the locality of the purchase with the instrument; as it will not always be possible to ascertain the precise position of the child's head before the commencement of the operation. When, on the other hand, the operator has reason to believe that the head is gradually moulding to his purpose, and beginning to advance, though in ever so small a degree, along its destined passage, he has of course only to persevere in the same cautious efforts.

In ordinary cases, and in the absence of extreme confinement of the pelvis, the principal difficulty will present itself at the commencement of the operation, when the head has to pass through the superior aperture; inasmuch as in a large majority of instances of defective capacity, the greatest degree of confinement of the pelvis is there situated.

8. It is a very good rule, to be attended to in all cases of operative midwifery, where the application of artificial force is indicated, that the force to be used should be applied, in the first instance, in a very moderate degree, which then should be progressively, but still most cautiously, augmented according to the demands of the particular case. It is an advantage nearly equal of both modifications of the crotchets with guards, which have been described, that they are compatible with the exertion of a degree of force greater beyond comparison than can be exerted with equal safety with any kind of unguarded crotchet. In perusing this statement, however, the reader must not suppose that any degree of attracting force, to be limited only by the operator's muscular power, may be used with impunity in these operations: for it may be easily understood that a powerful man might be competent, in point of physical strength, to divide in sunder the entire pelvis of his unfortunate patient, with any sort of instrument which might ensure for him an unyielding purchase. What is intended to be conveyed is, that much greater force may be used WITH IMPUNITY with a guarded than with an unguarded crotchet. With a guarded crotchet the practitioner is at liberty to use both his hands at the same time; by which he becomes competent to effect his attraction with much more steadiness and accuracy, and to vary the direction of the force applied, and the bearing of the purchasing part of the instrument on the fœtal head, with a considerable accession of effect.

9. The operation of craniotomy is sometimes required to be performed in preternatural labours; when the head is too large to engage in the pelvis, after the delivery of the body. It is moreover not unusual to meet with preternatural presentations in cases of confined pelves. Either with or without manual assistance, the birth is generally pretty easily effected in such cases, until the head comes to engage at the superior aperture of the pelvis. If the defect of capacity be not considerable, and the fœtal skull exceed not the ordinary dimensions, nor the usual degree of ossification; such is the power of a dexterous practitioner

over cases of this description, that he will sometimes succeed in effecting the delivery by manual operation alone. This method not succeeding, it was recommended by Smellie, and the practice is still very generally adopted abroad, to attempt the delivery by the forceps. We are now of course supposing the child to be alive, and the forceps proposed to be used as a means of bringing the fœtal head into the pelvis with the utmost possible dispatch. But it does not appear to the author that the forceps are nearly so well adapted an instrument for these cases as the hand. By passing up two fingers of one hand into the child's mouth, and applying the other hand to the shoulders, and drawing down the head in a line with the axis of the brim of the pelvis, observing at the same time the proper rules as to the mechanism of such cases, the child might be brought into the world alive much more frequently than by the most dexterous use of any kind of forceps that have ever been constructed. Moreover, it may be observed in favour of the hand, that it is always ready, as well as generally much safer to the MOTHER than any artificial implement whatever. But in cases of considerable disproportion between the bulk of the child's head and the capacity of the pelvis, the life of the child would soon cease to be an object of protective treatment; and after its death, there could no longer exist any ground of hesitation as to the preferableness of opening the head to the application of much force of traction without that expedient, whether exerted by the hands or by the forceps. This duty then being determined upon, the scissors or perforator are to be taken up as in the former case, and by a boring motion forced into the interior of the skull. But, as in this case we have not the head presenting, we should find it most convenient to perforate the cranium immediately behind the more accessible ear. A sufficient aperture having been thus effected in the fœtal head, and the tissue of the brain and its involucra well broken down and partly evacuated, the several bones of the fœtal skull will then quickly collapse together, and the delivery will not usually be attended with much further difficulty. If we suppose the trunk of the child to have passed without assistance, or to have effected its transit at the expense of only a small degree of artificial force, the use of the crotchet would scarcely ever in such cases be required; unless indeed as a matter of convenience, to save time or trouble, we might choose to avail ourselves of that form of it which in this country we commonly call the blunt hook; and which, upon being fixed to the inferior and occipital part of the aperture, may be used in such a manner as to command a prodigious purchase.

### OF THE BODY CROTCHET.

The two varieties of crotchets with guards, described in the preceding pages, are more especially adapted for operations upon the fœtal head. But it sometimes happens, though confessedly very rarely, that other parts of the child may require to be made the subjects of similar operations. Under the circumstances

of very great want of space at the brim of the pelvis, the author has known the whole of the fœtal head removed; and yet the body remain entirely above the distorted superior aperture for several hours, and in defiance of repeated efforts to effect its extraction.

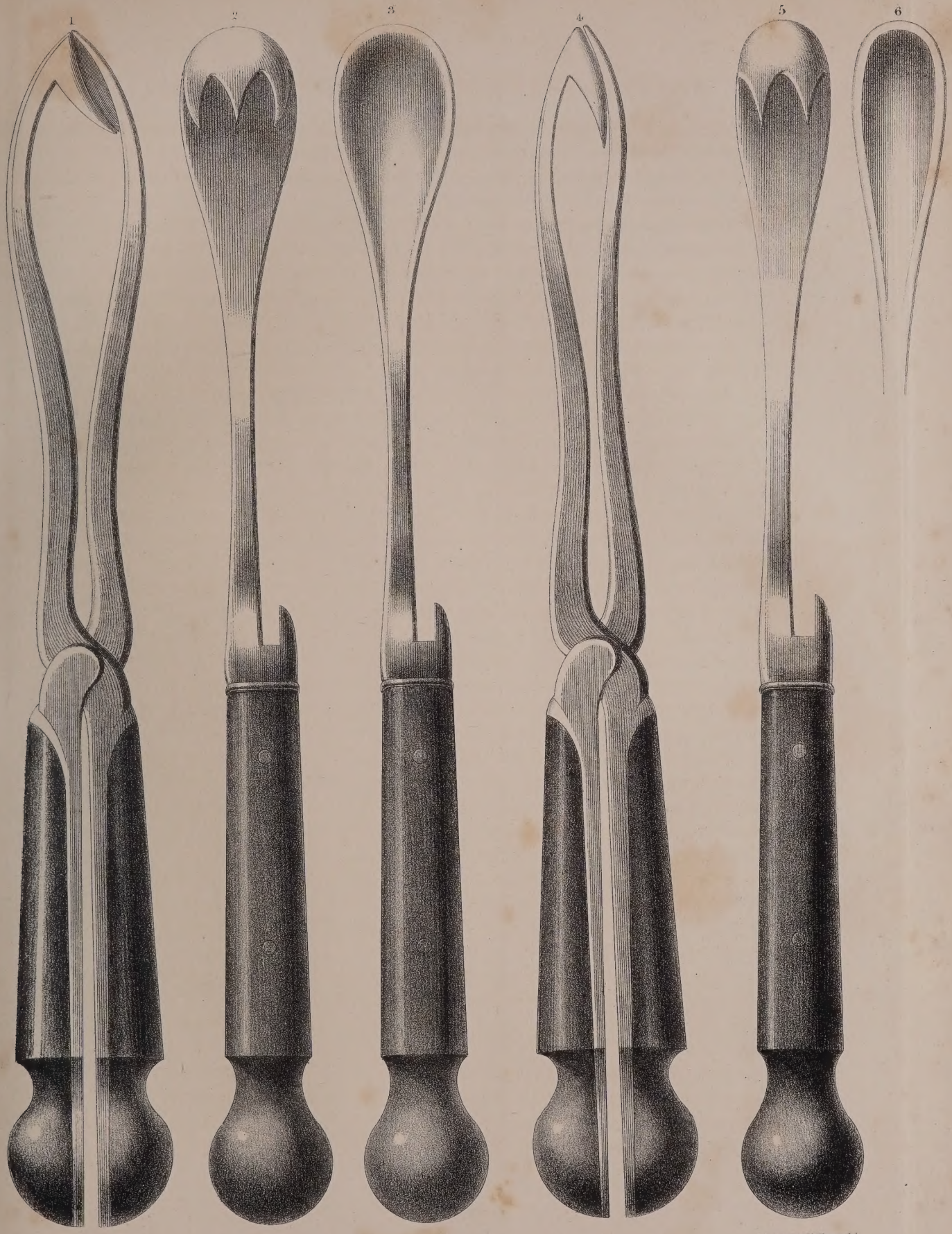
The instrument represented in plates XLI. and XLI. B, is intended to accomplish the extraction of the body, after the previous removal of the head. The use of this instrument is so faithfully represented in plate XLI. B, that the reader will instantly comprehend both the object and the mode of its application. The first figure, plate XLI., gives a precise idea both of the form and the dimensions of the first instrument on this principle that was ever constructed. Its shanks are made very strong, in order to ensure for it a great degree of compressing force, as well as of power of transfixing the fœtal body with its crotchet prongs. The crotchet branch is to be passed up to its intended destination under the careful protection of the left hand of the operator, which of course must be previously lodged within the pelvis for that purpose; and the fingers carried up some distance above the brim in order to adjust and to fix the points of the prongs to the part of the child's body which is intended to be made the locality of their purchase. When the crotchet branch is firmly fixed, the guard should be passed on the other side of the pelvis, and applied to the opposite surface of the fœtal body. The locking should then be duly adjusted, and the handles of the instrument firmly bound together by a tape.

The first efforts of extraction, it need scarcely be observed, should be made in a line with the superior aperture of the pelvis, and in such a firm but cautious manner, as not to fail to bring the fœtal body through its narrow passage, and yet without permitting any part of the shanks of the instrument to impinge against the parietes of the pelvis.

Figs. 4, 5, 6, of plate XLI. are intended to represent an instrument precisely of the same kind with the other, but of such dimensions as necessarily to occupy much less space than it. In cases therefore of extreme confinement of pelvis, it might be expedient to make choice of this latter instrument; the shanks and the metallic portions of the handles being supposed equal, in all their dimensions, to those of the instrument represented in figs. 1, 2, 3. Accordingly these shanks, whatever be the dimensions of the purchase-part of the instrument, must be sufficiently strong to ensure them against all possible risk of bending; which would expose the purchase-branch to the loss of strict correspondence with the guard-branch, and therefore to the loss of the protection which otherwise it could not fail to receive from it.

In giving directions for the construction of all instruments of this class, young practitioners cannot be too particular in insisting on an unbending strength of their shanks and handles.

For gentlemen who may not choose to go to the expense of both these instruments, the author thinks the smaller specimen would be the best to order. The power and mechanism of the lock should be such as most completely to

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W. Pearson, editor

control the purchase-part of the instrument, and to ensure a most perfect protection of the crotchet by its proper guard.

### OF EMBRYOTOMY OPERATIONS IN CASES OF EXTREME DISTORTION OF THE PELVIS.

The smallest measure of the pelvis, compatible with the extraction of a dead child piece-meal by the natural passages, without great risk of danger to the mother from the force used in the operation, has been more disputed than positively determined. The author has known examples of fœtal heads so large, even after being opened and evacuated, as not to admit of being brought down through the superior aperture into the cavity of the pelvis without the exertion of considerable force; even when he had formed his estimate from the most accurate admeasurement he was capable of instituting, that the conjugate diameter of the brim could scarcely be less than three inches. If we suppose the conjugate diameter not to exceed TWO INCHES AND A HALF, the extraction of the basis of the fœtal skull would necessarily be attended with much additional difficulty. But if the intermediate space between the symphysis of the pubis and the promontory of the sacrum be presumed to be no more than TWO INCHES, then the attempt to extract a full-grown child by the natural passages by means of the crotchets in common use, or by any crotchets used with much force or for a long time together, would expose the subject of the operation to no little risk of contusion of the structures concerned in the labour, and consequently the woman herself to the eventual loss of her life. The author wishes to be considered as making this statement very deliberately, and with due advertence to the opinions of Dr. Osborn, and others who have maintained a contrary doctrine. By guarding the hooked ends of instruments of this class, as we have seen has been very effectually done for all the specimens of crotchets in the preceding pages, it is obvious that we acquire a prodigious accession of power, and of power capable of being used with the most perfect safety to the mother, over the unfortunate cases which they are intended to relieve. After all, there must be limits somewhere to the safe use of crotchets; and these limits ought certainly to be such as should exclude even an approach to a violent exertion of attracting force, which might compromise the security of the important ligaments of the pelvis; or, if possible, the other still more important structures contained within its cavity.

In urging professional attention to the careful observance of these limits, the author is happy to feel himself in a situation to offer a safe substitute for the exertion of inordinate force in the treatment of the deplorable cases under consideration, not only without contracting the limits of our art, but compatibly with a valuable extension of its power. The expedient he alludes to consists in the application of a simple but very efficient contrivance, for effecting a much greater reduction of the fœtal skull than has hitherto been attempted in the practice of

modern times. It is indeed a power by which any portion of the fœtal skeleton, presenting at the brim of a contracted pelvis, may be broken down into small fragments of about half an inch in diameter, with the most perfect impunity to the tissues of the mother concerned in the operation. A representation of this instrument is given under the designation of osteotomist, or bone-pliers, in plates XLIII. and XLIII. B. It is an example of a new application of mechanical power, combining the principles of a punch and pair of scissors. The whole of the instrument is made of solid and well-tempered steel. Its cutting ends are worked into two long and fenestrated oval rims of unequal size, but of nearly equal strength. The smaller is of a size to enter into and to fit closely within the parietes of the larger. The mutually adapted parts of each being formed into a continuous oval edge, they become competent when brought together, and firmly applied to their object, to exert a prodigious power upon any portion of bone placed within their grasp. The handles are of great length in proportion to the parts anterior to the joint; and, being of sufficient strength to be perfectly inelastic and inflexible, their power must be deemed equal to the full length of their leverage, multiplied by the muscular force in using them.

The author has, out of curiosity, and to show the extraordinary power of this instrument to his pupils, made large breaches in strong ribs of beef, by cutting out of them a succession of pieces, in the manner represented in pl. XLIII. fig. 1; which indeed is given to illustrate the use of the osteotomist in its application to the fœtal cranium. Having a power like this in reserve, it is evident that the employment of any inordinate force of attraction with the crotchet may almost in all cases whatever be happily and certainly avoided. One or two sections taken out by the osteotomist from the basis of the skull, which is by far the most bulky part of the fœtal cranium, will generally have the effect of putting an end to all difficulty. In cases of greater confinement, a few additional sections will perhaps be required to be made, in order to give a sufficient degree of facility to the after part of the operation. The form and thickness of the different parts of the osteotomist may be easily conceived by taking a near view of its representations in pl. XLIII., especially in fig. 3. It will be there seen that the extreme breadth of its broadest oval rim is precisely three-quarters of an inch. It may therefore be taken for granted, that wherever there is sufficient space to admit of the introduction of this instrument, together with the point of an index finger to feed it with successive purchases of bone, it will be practicable to effect, and therefore prudent to attempt, the delivery by the natural passages. There are few pelves, even in large collections of distorted ones, with superior apertures so small as not to furnish from between an inch and an inch and a half of space in the direction of their conjugate diameters, or at least of antero-posterior diameters across some part of their brim. In any such cases, it would be the practitioner's duty to avail himself of the use of the osteotomist, and to undertake the delivery by the natural passages.

If indeed we are not greatly overvaluing the power of this instrument, it

will enable skilful operators to effect deliveries in cases of moderate distortions with much more facility to themselves, and proportionally less danger to their patients, than heretofore; but it will also have the effect of reducing, almost to zero, the necessity of having recourse to that last extremity of our art, and the forlorn hope of the unhappy patient, the Cæsarean operation. In this country, it is well known, that with one exception, there being no good reason for disputing Mr. Barlow's case, the Cæsarean section has uniformly failed in the more important part of its object, that of preserving the most valuable life of the mother; whilst even in France and Germany where it has been most frequently performed, its fatality, however variously reported by its friends and foes, has been universally acknowledged to have greatly exceeded in frequency its happy results. Any suggestion therefore for superseding the necessity of so formidable an operation, or even for greatly reducing the frequency of its necessity, seems entitled to the attention of the profession; and that, indeed, is all that the author wishes at present to claim in favour of the osteotomist.

### OF THE MODE OF USING THE OSTEOTOMIST.

The cases which form the objects of treatment with this instrument are of two kinds; first, those in which it may be used with advantage to facilitate delivery with the crotchet, and simply to supersede the necessity of much pulling with that instrument; and secondly, cases of so much confinement and distortion of the pelvis, as must render delivery by the natural passages, without the assistance of some kind of osteotomist, impracticable. The first class of cases supposes a degree of confinement of the pelvis somewhat more considerable than merely to require an aperture to be made in the child's head. In a case for instance where the longest line, from any part of the sacrum, at the brim of the pelvis, to a corresponding part in front, might not exceed two inches and a half, the entry of the fœtal head into the cavity of the pelvis, even after its penetration by the scissors or perforator, could not be expected to take place without the application to it of a considerable amount of force; which however might either be propellent from above, and the effect of vigorous and long-continued uterine action, or that of attraction from below, by means of crotchets, teeth-forceps, or other artificial powers.

The exertion of both these varieties of power, it may be easily understood, must have its limits. With respect to the former, it is often very greatly reduced, before it is finally decided to have recourse to the last deplorable expedient of opening the child's head; whereas, on many other occasions, it might involve much serious inconvenience to admit of its indefinitely-protracted exertion. With respect to the latter kind of force, it is a form of power which, in a very great majority of cases of cephalotomy, might, if used with discretion and dexterity, be had recourse to most beneficially for those interests; but, on the other hand, it should not be abused, by being too long delayed or too vigorously applied. With an instrument at hand possessing the properties of the osteoto-

mist, the operator is happily relieved of all motive for obstinate perseverance in his attempts to deliver by main force, whether by means of the crotchet, or by any other simply pulling instrument whatsoever.

The second class of cases to be benefited by the use of the osteotomist, are those of so much confinement of the pelvis, as to render the safe delivery of the patient by the natural passages impracticable, without the use of some kind of osteotomist.

Most of the authors who have written on the properties and uses of obstetric instruments, have referred to certain metallic implements used by the ancients for crushing and breaking down the bones of the unborn fœtal subject. The PISTRON of Hippocrates was possibly some sort of contrivance of this kind. Whether that, however, or any other pieces of mechanism, known in ancient times, were really competent to effect the reduction, in any useful degree, of the bulk of the fœtal skull, and especially of its BASIS, it is perfectly impossible for us at present to predicate; inasmuch as we have no descriptions left of their forms, precise objects, nor principles of action. The osteotomist is therefore an instrument probably as new in principle as it is remarkable for its power. Its cutting edges are protected by being inclosed within the level of the thicker parts of their respective rims, which are every where rounded and polished into smooth surfaces, without points, angles, or projections of any kind.

The mode of using the osteotomist is so accurately represented in the principal figure of plate XLIII. as to supersede the necessity of very minutely describing it.

The whole of the left hand should be introduced into the vagina. The index and long finger must then be carried forward into distinct contact with the portion or fragment of cranial bone most immediately presenting; so as to be able to feed the mouth part of the instrument with successive purchases, and to guard effectually every other kind of structure from entering within its grasp.

The entire length of the section of bone which the osteotomist is competent to remove by one action of its cutting power is precisely an inch; but it will be found more convenient to take off at one stroke, only about two-thirds of an entire section: and if this precaution be not attended to, the mouth of the instrument will be apt to get choked, by portions of bone advancing too far within its clams, and beyond the purchase of its cutting edges; which will have the effect of preventing those edges from closing; and therefore of more or less completely defeating the intention of the operator.

Having effected the removal of one piece of the most projecting and accessible portion of the fœtal cranium, by firmly pressing together the handles of the osteotomist; then another portion of the skull is to be put within its cutting edges by the directing fingers of the left hand; and so the process is to be continued, until the basis of skull is more or less completely broken down, or removed, according to the particular demands of the case.

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PRECAUTIONS NECESSARY TO OBSERVE IN THE USE OF THE OSTEOTOMIST.

The first requisite towards the proper application of this power is, that the instrument itself shall be perfect in its construction. Convinced as the author is of the great difficulty of ensuring this object by any further description of it which he might attempt to give; or by any more laboured admeasurement of its different parts than will be furnished in a future page in explanation of the plate in which it is represented; he trusts he may be permitted to avail himself of this opportunity, without incurring the charge of an illiberal partiality, to recommend to practitioners who may live at great distances, and more especially in foreign countries, to order at least their first specimen of the osteotomist of its original maker, Mr. Botschan, of 35, Worship-street, Finsbury-square; who is, indeed, a maker of obstetric instruments on a large scale for the trade, and an excellent workman.

2. Before we decide upon making the attempt to deliver by the natural passages, in a case of extreme distortion, it will be necessary that we should ascertain whether there be sufficiency of space to admit of the free use of the index and long finger, together with the purchase part of the instrument at the brim of the pelvis. The author's opinion might here be sought as to what should be considered the smallest space at the brim of the pelvis, compatibly with the practicability of delivery by the natural passages, with the option of using the osteotomist. He feels however that he cannot well meet this demand without incurring more responsibility than he is willing thus categorically, and without some further explanation, to undertake.

He thinks however that the instrument may be safely used within an intermediate space of an inch and a half between the promontory of the sacrum and the anterior boundaries of the brim of the pelvis.

In plate XLIII. B, the reader will find represented an instrument constructed on the same principle with the common osteotomist, and like it intended to make its way through portions of the fœtal cranial bones. The special intention of this variety of the instrument is to make long sections through, and in different directions across, the fœtal skull. The sketches given in figs. A and B of this plate are intended to represent another variety of the osteotomist, in which the whole of the purchase or cutting part of the instrument, is supposed to be curved laterally, and therefore to be adapted for making long but curved sections into the fœtal skull. This form of the instrument may also be used with great safety and convenience, to effect the excision of polypi, and other preternatural growths, deemed proper objects of extirpation by excision.

OF EMBRYOTOMY OPERATIONS IN GENERAL.

The term embryotomy has generally been employed by systematic writers to express the more general mutilations of the fœtal subject, for the purpose of

reducing its bulk; and of course includes within its meaning the operation of craniotomy, as well as sections or cuttings with sharp instruments, of whatever kind, of all other single parts. In nine out of ten cases, it is only the head, which in general is incomparably the more bulky and unyielding part of the entire child, that is found to require this mutilating treatment. But, in a VERY SMALL proportion of unhappy subjects of extreme distortion of the pelvis, the cavities of the fœtal chest and abdomen; sometimes one of these, sometimes both; and then almost always in addition to the head; are required to be opened and evacuated. For the perforating part of these operations, the same instruments are to be used as are employed for craniotomy; viz. the scissors and perforator. The object of the operation is also the same, viz. that of enabling the operator to effect the evacuation of the contents of the cavity or cavities laid open. The contents in question may either be the natural viscera of the parts, or those organs with the addition of effused morbid fluids; sometimes in a gaseous, sometimes in an aqueous form. If only the former, viz. the natural viscera, we have to presume on the presence of an extreme degree of confinement of the pelvis: if the latter, the difficulty might depend exclusively on the morbid and preternatural bulk of the affected fœtal cavity or cavities. The relief of cases of difficulty from preternatural enlargement of the fœtal subject, in consequence of effusion of morbid fluids into its cavities, is attended with very little difficulty. A mere incision into such cavities, in order to admit of the discharge of the fluids, is for the most part all that will be required to be done.

In making an aperture into the chest, we should observe the following procedure. Either the head or breech must be supposed to be already born. In the former case the practitioner encounters a great difficulty, and at length finds it impossible to bring down the chest. The head being supposed to be already born, an evidence thereby becomes accessible, either that the child is yet alive, or the reverse. If alive, however little might be the value of a life in such circumstances, the incision into the chest should be made with the utmost care; so as to avoid if possible the wounding of any of the visceral tissues within. It has been recommended to use a long flat trocar to effect this object; and the suggestion seems to be a judicious one. It is probable that the infrequency of births of this kind is the reason why nothing very precise has been decided upon, as to the most proper instrument to be used in such cases. A portion of the blade or point of the instrument, of whatever form, must necessarily penetrate into the cavity of the pleura costalis. The operator should endeavour if possible to fix on such a locality for his incision, as might give him the best chance of not encountering any of the more important vessels within. In the event of both pleural cavities being affected by the same disease, the operation of paracentesis would be required to be made into each. In such a case it would of course be proper to defer the second operation, until the first had failed to afford a sufficient reduction of the fœtal chest to admit of the extraction. It being possible that the incision first made might be directed into the wrong

cavity; it is scarcely necessary to observe, that it would then become the duty of the operator to introduce the point of his instrument into the other.

Obstructed births, from similar accumulations of aqueous fluids in the abdominal cavity, are to be treated much in the same manner, by puncture with a trocar, incision with a bistouri caché, or penetration of the distended parietes by a perforator or scissors, according to the special indications of particular cases. Immediately on the discharge of the fluid, the whole difficulty of the labour will generally cease, as a matter of course. In the presentation of the lower extremities or breech, the difficulties incident to labours of this class would present themselves at different stages of the labour, according to the locality of the hydropic distention. Cases of this kind being of very rare occurrence, the practitioner should avail himself of all accessible means to decide the fact, before he could be justified in proposing or performing so formidable an operation as the paracentesis on a living child. Enlargements of the fœtal head from hydrocephalus are much more frequently encountered than morbid distentions, from hydropic effusions, of either of the other cavities.

Cases of obstructed labours on account of distention of the fœtal cavities with putrid gas, are to be relieved on the same general principle with the foregoing; viz. that of making an aperture for the escape of the distending fluid. A principal duty in the management of these cases, is to ascertain the fact or actual presence of the putrefactive process. The operation of perforating the affected cavity may be easily performed with any sort of pointed instrument.

### OF THE UNAVOIDABLE MUTILATION OF THE FŒTAL SUBJECT IN SOME CASES OF CROSS PRESENTATION.

It has been for many years the established practice of obstetric practitioners, to perform the operation of turning by bringing down the feet in ALL CASES OF CROSS PRESENTATIONS, when occurring at the full period of pregnancy. Such indeed has been the estimation in which the operation of turning has been held since the days of Ambrose Paré, and so obligatory the duty of performing it in all cases supposed to require it, that several of our most approved systematic writers have scarcely even glanced at possible exceptions to the rule. The author however is not the first to call professional attention to the absurdity and danger of admitting the doctrine as a principle of universal practical application in the cases alluded to. See an excellent paper on that subject by the late Dr. John Sims, in Simmons's Medical and Physical Journal, vol. vii. p. 481. The operation of turning should be considered as a means most especially intended to preserve the life of the child; inasmuch as the mother might often be delivered, at least with EQUAL SAFETY TO HERSELF, and with much less inconvenience both to herself and to the operator, by other means. If, then, the fœtal life has already ceased to be an object of our art; it being perhaps known that the child has really ceased to live; we then can have no other sufficient motive for choosing

this mode of withdrawing it from the uterus, than that in some cases, such an operation might be very easily and safely accomplished. It is evident, however, that the motive in question can only be permitted to operate so far as to warrant a gentle attempt to effect the delivery in this way, and to seize an occasional opportunity of effecting it more conveniently, and with less probability of shocking the feelings of the attendants upon the labour, than by another method, to be presently described. The operation of turning, however, in the circumstances here supposed, especially if likely to be attended with difficulty, or at all events with danger to the mother, should on no account be undertaken.

But not only is the operation of turning objectionable in a case of probable difficulty, when the child is known to be already dead; but there are also cases where it should not be engaged in, even where there might be ample evidence of the child being yet living. Suppose, for example, the hand of the child, distinctly felt to move, to be the presenting part; that the liquor amnii is known to have escaped many hours before the question of delivery by turning is made matter of deliberation; and that, upon careful examination, it is discovered that the pelvis is certainly too small to admit of the delivery of a living child at the full period of gestation. In a case of this description, it is obvious that the operation of turning could only be had recourse to with propriety, as a matter of convenience. In respect to the child it could have no useful purpose; and, if likely to be attended with difficulty, it might also prove hostile to the best interests of the mother.

Again, we are sometimes called upon to give our assistance in cases of mal-presentations, at a very late period of a labour; sometimes many hours, and occasionally several days, after the escape of the liquor amnii. Upon paying our first attentions to such a case, we should discover, among other very serious indications, the following facts and symptoms: viz. an arm of the child presenting, much swelled; the vagina greatly tumefied, and very tender to the touch; the fœtal shoulder driven down like a wedge a considerable depth into the cavity of the pelvis, or perhaps retained very high above the brim, from the body of the child being incarcerated within the contracted uterus; that organ being in close and rigid apposition to every accessible part of its surface; great fœtor of the discharges; and yet constitutional power enough left to keep up a tremendous action of the uterus, together with a corresponding excitement of the heart and arteries. Add to the foregoing circumstances the fact, that the patient may have been duly prepared for this forlorn attempt to save both herself and child, by a large bleeding, and by the exhibition immediately afterwards of a full dose of opium; but still without any sensible diminution of the strong and spasmodic bearing of the uterus upon the child, or consequently of the child against the brim of the pelvis. The author would appeal to any man of experience and acknowledged character in his profession, whether he could reasonably calculate, in a case like this, on being able to preserve the child's life by the operation of turning.

But we may suppose circumstances still more desperate. Let it be a presumed fact, or even a matter of strong suspicion, that the uterus and bladder, peritoneum, bloodvessels, or any other structures, situated at or in the neighbourhood of the brim of the pelvis, were in a state of contusion from the long duration and great violence of the parturient action, but still that the action in question might not be quite extinct. Experience proves that the womb may be ruptured by violent and pertinacious attempts to perform the operation of turning in these untoward circumstances. A state of contusion is, in other words, a condition of morbid tenderness of the tissues of the parts so affected. It can never be supposed to exist without being accompanied by symptoms of inflammatory action, indicative of a progress more or less rapid towards an eventual exhaustion both of the uterine and constitutional powers. The patient's life must be presumed to be already in a state of no little jeopardy; and great indeed would be the hardihood of the practitioner who would thrust forcibly into the cavity of the uterus, so large an instrument as his hand and arm, in circumstances so totally devoid of a prospect of being able to accomplish any good by it. From such an operation there would be every thing to fear and scarcely any thing to hope for. In all probability the child would be still-born, if not actually putrid; and the mother's life, already in some peril, would be involved in tenfold danger.

The expediency of the operation of turning would surely not be to be measured by the competency of a practitioner in point of muscular strength to accomplish it, but by a fair estimate of its promise and adequacy as a means of saving the child's life, without exposing that of the mother to much additional danger. If therefore we suppose the child to be already dead, or the circumstances of the labour to be such as to make it impracticable to bring it into the world alive by means of turning, or impracticable even to perform that important operation at all without exposing the mother to extreme danger, it would then become the unquestionable duty of the practitioner to effect the delivery by embryotomy. The child in the case supposed being situated transversely, the first step of that procedure would be to divide it into two principal parts, head and body, by passing a well-adapted cutting instrument across and through the entire structure of the neck. Before the introduction by Ambrose Paré of the modern operation of turning by the feet, it seems probable that such a division of the fœtal subject was occasionally performed by the older surgeons, and perhaps more frequently than it may have been even thought of since that period. The separation of the child's head from its body in the very circumstances of which we are now speaking, was indeed very distinctly recommended by Celsus: "Si vero transversus est, neque dirigi potuit, uncus alæ injiciendus, paulatimque attrahendus est. Sub quo fere cervix replicatur retroque caput ad reliquum corpus spectat. Remedio est CERVIX PRÆCISA; ut separatim utraque pars auferatur. Idunco fit qui priori similis, in interiore tantum parte, per totam aciem exacuitur. Tum id agendum est, ut ante caput, deinde reliqua pars au-

feratur: quia fere, majore parte extracta, caput in vacuam vulvam prolabitur extrahique sine summo periculo non potest." Cels. lib. vii. cap. 29.

It seems, however, that this idea of severing the fœtal head from its body has never obtained a very general prevalence among practitioners in midwifery. Heister, indeed, alludes to it as an operation newly invented in his time by Van Hoorn. Heister Institut. Chirurg., cap. 153. sect. 9. The best-recorded case of this kind that the author is acquainted with, is one that was published some years ago by Dr. Sims, in the very interesting paper already referred to in the Medical and Physical Journal. It cannot be disputed that the general principle of the operation is just; and it is a matter of some surprise to the author that its almost absolute indispensableness as a means of saving the mother's life, has not long ago, and more especially since the publication of Dr. Sims's paper, given it the importance of an established rule of practice in the treatment of arm and shoulder presentation cases NOT ADMITTING OF THE SAFE PERFORMANCE OF THE OPERATION OF TURNING. So far, however, is this from being the case, that the art possessed not a safe and suitable instrument to meet the proposed indication till within about ten years ago, when the author published his Elements of Operative Midwifery. He now feels some satisfaction to offer to the reader a choice of two instruments, of which both appear to him to be well calculated to effect the first and most difficult part of the operation, viz. the decollation of the fœtal subject.

The first, represented in pl. XLII., figs. 1 and 2, is a little contrivance of his own suggestion. As far as he knows, it is therefore new in its principle; and having had occasion to use it several times within the last six years, he may be permitted to speak of it as a useful accession to the mechanical resources of our art. Among his pupils it has generally had the name of "The guarded embryotomy knife." It consists of two parts, separable from each other at a common joint, of precisely the same construction as that of the English obstetric forceps. The more efficient counterpart is armed with a knife, diagonally attached to its shank, which is to be passed up into the pelvis properly directed and guarded by the practitioner's left hand, and carried over the child's neck, so as to obtain a perceptibly firm purchase of it. The other part, fig. 2, is simply a guard to the knife, and is to be passed up on the opposite side of the child's neck, to be then duly adjusted with its counterpart at the lock. The handles should be tied together with a strong tape; after which the practitioner would have to pass two fingers of his right hand into the pelvis, in order to ascertain finally the precise circumstances of his case, and especially the important fact of the child's neck being within the perfect purchase of the hooked embryotomy knife. That point being positively ascertained, the operator will only have to draw down the instrument with a cautious firmness, in the direction of the axis of the pelvis, and the knife will be found to cut its way through the child's neck very perfectly, and at the expense of a very inconsiderable degree of force.

Fig. 1.

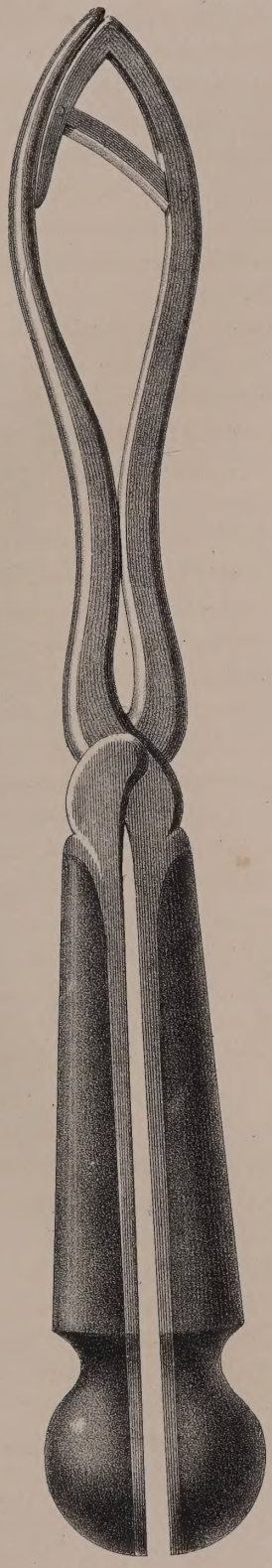


Fig: 2.

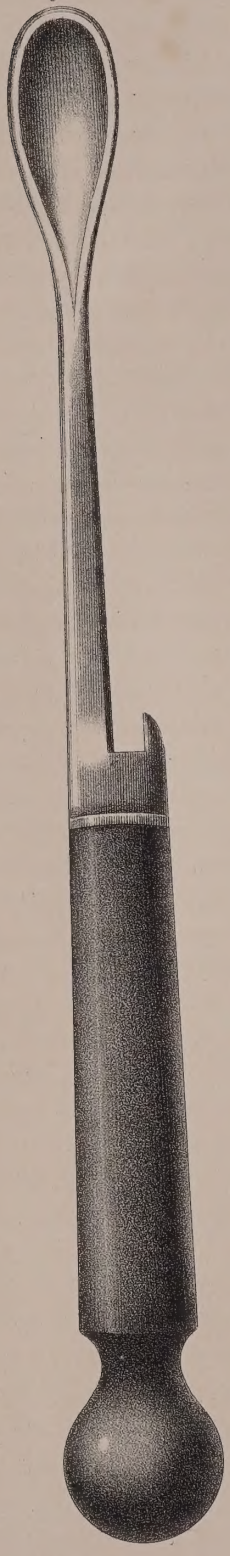
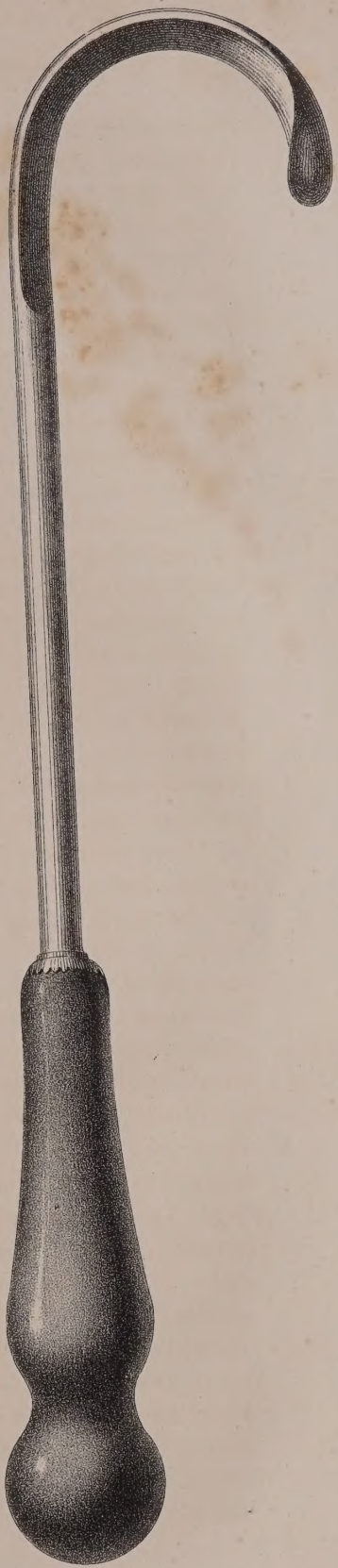
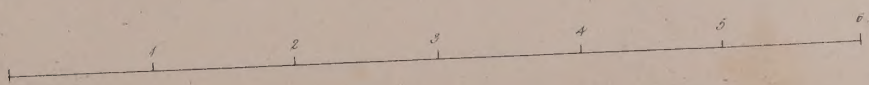


Fig: 3.



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The other instrument, see fig. 3 of the same plate, is one which the author's friend and colleague, Dr. Ramsbotham, has been in the habit of using in the same circumstances. In giving his kind permission to take a drawing of it, he referred for the idea of it to Dr. Sims's valuable paper already quoted. In that paper we find it stated that the late Dr. Garthshore had, many years previously to the drawing up of the paper in question, represented the blunt hook as an instrument with which he himself had easily performed the operation referred to. Some time afterwards, however, an opportunity occurred to Dr. Sims of making trial of the blunt hook in a case of this kind; which he considered a favourable one for "putting in practice the operation recommended by Dr. Garthshore; and accordingly" he "passed up a blunt hook round the neck of the child, which was so low down as to be easily got at; and he pulled FORCIBLY, twisting at the same time, with a view of separating the head from the body: but although the child was very putrid, the neck resisted a very considerable force; a force, as it proved, sufficient to extract the child double as it was coming down; the head and the thorax passing at the same time." In a subsequent part of the paper, Dr. Sims observes that the blunt hook, "if filed to an edge on the inner side of the bend, might perhaps be a very convenient instrument for that purpose, and appears to be the very same as that recommended by Celsus." See the passage in Celsus already quoted. Without taking upon him to determine how much of the merit of the present instrument should be apportioned respectively to Celsus, Dr. Garthshore, Dr. Sims, or Dr. Ramsbotham, he thinks he may safely venture to connect with the idea of it, now it is perfected, much beautiful simplicity and ingenuity.

With either of the above instruments, the operation of decapitation may be performed in most cases without any great difficulty; and therefore of course without much additional exposure of the parts at the brim, and within the cavity of the pelvis, to the danger of contusion. The difficulty of such an operation should indeed any difficulty occur, will be in proportion to the presence of one of two circumstances, viz., the amount of impaction of the child's shoulder and chest at the superior aperture of the pelvis, and the great distance relatively of the child's neck from the middle and inferior part of the cavity of the pelvis, where it would be most accessible to the manœuvres of the operator.

Both these instruments might be a little varied in their forms, by giving them a gentle bend at their shanks, in the direction of one of the flats of their respective blades; and for some particular purposes, such a curve would be a means of adding to the facility of operations with them. The curve here proposed should, in both instruments, occupy the part of the shank most approximating to the cutting blades; and in Dr. Ramsbotham's instrument it might include about an inch and a quarter of the cutting blade itself. These modifications are, however, not very important; and any gentleman not choosing to incur the expense of more than one variety of either or of both of these instruments,

should order them to be made as accurately as possible to the representations given of them in the figures 1 and 3 respectively of plate LXII.

After having effected the separation of the fœtal head from its body, the latter is to be brought down foremost into the birth, and delivered. If the arm is the presenting part, and is not in a state of very advanced putridity, that extremity will afford abundance of purchase for the extraction of the trunk. If however the shoulder should be the presenting part, the trunk will have to be brought down by means of the blunt hook passed up into the axilla. In either case, the extraction of the decapitated body will for the most part be easily accomplished. After the entire removal of the body, the head will generally be found to present pretty low down within the cavity, or at least very accessibly at the brim of the pelvis. In either case, the perforation and ultimate delivery of the head will seldom be attended with much difficulty. It has however happened to the author to have been consulted in a case of this description, where the unusually remote distance of the head above the brim of the pelvis, and within the body of the contracting uterus, made it extremely difficult to effect its perforation, by a pair of embryotomy scissors of the ordinary length. One of the gentlemen present very properly suggested that a much longer perforator would have greatly contributed to the facility of that part of the operation. An instrument perfectly well adapted to meet the difficulty encountered in the case in question, should have been at least twelve inches and a half long. It may be observed that Celsus, in the passage quoted above, directs the child's head to be extracted before the body, on account of the great difficulty and danger which he presumed would attend the bringing down of the head "in vacuam vulvam," after the previous extraction of the body. Celsus no doubt was in this matter a mere theorist. Except in the recent case to which the author has just alluded, he has never encountered any serious difficulty in bringing away the head, after the previous separation and removal of the body: whereas, under the circumstances of the usual relations, as to dimensions between the mother and the child, the extraction of the head before that of the body would appear to be almost mechanically impossible.

In cases of adventitious difficulty from the accidental coincidence of deformity of the maternal pelvis with the other and peculiar circumstances of the class of labours of which we are at present treating, it might be a good rule to wait a few hours after the removal of the body, before any attempt should be made to extract the head. The principle of this rule is obviously founded on the very reasonable expectation to be entertained, that during the interval supposed, the bearing-down efforts of the uterus might greatly favour the engagement of the child's head within the pelvis; or at least so far promote the intention of the operator as to give it a firm but accessible lodgement at the superior part of that cavity.

PRACTICAL OBSERVATIONS ON THE USE OF EMBRYOTOMY INSTRUMENTS.

1. The objects of operations with this class of instruments are cases of so much disproportion between the size of the child and the amount of space within the pelvis, as not to admit of the practicability of a living birth by the natural passages. This want of mutual proportion may depend upon an absolute defect of capacity of the pelvis itself, or indirectly upon deficiency of space within its cavity, from its being occupied by tumours, or other morbid and obstructing bodies; upon preternatural size or excessive number of some part or parts of the fœtal subject; upon an unfavourable presentation or position of the child or children relatively to the parturient passage; and lastly, upon a combination of any two or any greater number of these circumstances.

2. The osteotomist, plates XLIII. and XLIII. B., is an instrument more especially intended for breaking down the bones of the head or of other parts of the child. Its power is such that it will very quickly dispose of any other osseous structure that may be effectually presented to it. In using this instrument, therefore, the practitioner will not only have to guard any pendulous portion of the uterus, or of other structures of his patient; but also his own fingers, from being included within its uncompromisingly destructive action. The peculiar modification of the osteotomist represented in the sketches A and B is particularly intended to make curved sections into the fœtal skull; but it may be made useful for a great number of other amputating and extirpating purposes. In the treatment of monstrosities from excess of parts, it can therefore scarcely be doubted that this form of the instrument may be found a useful accession to the existing resources of our art.

3. Embryotomy operations having exclusively for their object the diminution of bulk of the fœtal head, are generally to be considered as not very difficult of performance. Such difficulties, however, when they do occur, must be presumed to depend either upon great distortion of the maternal pelvis, or upon some very morbid or monstrous condition of the child's head.

4. Operations of the same kind, having any of the parietes or cavities of the fœtal trunk for their object, may for the most part be expected to be attended with considerable difficulty. In some rare cases, the head, after being propelled into the interior of the pelvis, may remain there for a great length of time, without making any further progress; or may eventually be brought through the inferior aperture with much difficulty by means of the forceps; and yet the practitioner may find it impossible to bring down the body after it, even into the cavity of the pelvis. In a case of this description, it would become the first duty of the operator, after the delivery of the head, to ascertain, as accurately as he might be able, the nature and mode of operation of the obstructing cause. If it should appear that the child was not only quite dead, but actually putrid, he might almost certainly conclude, that the cause of the

obstruction would prove to be morbid enlargement of the chest or abdomen, from distention of the affected cavity with putrid gas. An anasarcous appearance of the integuments of the head and face, might be considered as indicating the effusion rather of an aqueous than a gaseous fluid into the cavities in question. In the event however of the child being alive, or in the absence of any proof of its having been long dead, it might be very plausibly conjectured, that the cause of impediment to the further progress of the birth might be a monstrous excess, either of bulk generally, or the result of a plurality of the parts of the fœtal subject.

In the treatment of any of the cases here supposed, the first step in the ulterior proceedings of the operator would be to secure a firm purchase of the child's neck, with a strong tape passed round it, or still better, if it could be conveniently done, through its substance; and then below the ligature, to effect neatly the separation of the head from the body. By this procedure, he would procure for himself more ample room to pass up his hand into the pelvis, or if necessary into the uterus; to ascertain the precise nature of the obstructing cause, and to guide any embryotomy instruments which may be further required, whether to perforate the chest or the abdomen, or to reduce and to remove monstrous parts.

5. In cross presentations, where it might be very difficult or dangerous to perform the operation of turning, or in case of difficulties not presumed to depend upon deficiency of space within the pelvis, it might often be a great advantage to have the child's neck brought down as low into the cavity of the pelvis as might be practicable; in order to make it more conveniently accessible to the purchase of the embryotomy instruments represented in plate XLII. In the case of a hand and arm presentation, the procedure here recommended would be best effected by pulling firmly down at the arm; and in that of a shoulder presentation, by drawing it down with the blunt hook passed up into the axilla. In the one case the arm, and in the other the blunt hook, would then be to be given to an assistant, to be held firmly down until the embryotomy knife of fig. 1, or the edged hook of Dr. Ramsbotham, fig. 3, plate XLII., should be passed securely over the child's neck by the principal operator.

6. The difficulty incident to the performance of embryotomy operations on account of cross births, must manifestly be greatly enhanced by distortions and other causes of defective capacity of the mother's pelvis. In some deplorable cases of this kind, it would require the most deliberate consideration of the practitioner and the assistance if attainable, of a well-appointed consultation, to determine whether, under all the circumstances, the Cæsarean section might not deserve the preference in such cases to any mode of delivery by mutilation of the child; as the latter might expose the mother to so much violent pressure and friction of the parts concerned, as could scarcely fail to prove fatal to her.

7. In cases of cross births, with the hand and arm presenting, not admitting of the safe performance of the operation of turning, the practitioner might very

properly entertain some hope that the breech might occasionally be pressed down into the pelvis, together with the arm, shoulder, and upper part of the trunk; or that, by the dexterous use of the common or body crotchet, he might himself be able to bring the inferior portion of the fœtal trunk into the cavity of the pelvis, together with the part previously presenting. In a consultation case of this description, where turning had been unsuccessfully attempted, the author once effected this object with his hand only, and afterwards very easily delivered by the breech. The subject of the case was a patient of Mr. Sumpter of Crawford-street, Portman-square, assisted by Mr. Francum of Lisson Grove. This case, though artificially terminated, may be considered as very directly confirmatory of the doctrine of Dr. John C. Douglas, in explanation of the peculiar facts of the extraordinary labours designated by the late Dr. Denman, "Cases of Spontaneous Evolution of the Fœtus." See Dr. Douglas's Essay already quoted, entitled "An Explanation of the Real Process of the Spontaneous Evolution of the Fœtus;" second edition, Dublin, 1819.

8. It has been a very common doctrine among the older writers, that embryotomy operations involve in them a great degree of criminality, if presumed to be had recourse to before the child is bereft of its life by the natural agencies of the labour. This unhappy notion must doubtless have often been the cause of dangerous procrastination. The child can but die. When therefore the absolute necessity of the sacrifice is once indubitably proved, it would be really cruelty, and not mercy, to protract the mother's sufferings one hour.

9. Embryotomy operations are frequently undertaken too late for the interests of the parturient; and that often happens without any particular regard to the prejudice just adverted to against making the child, while yet alive, the subject of mutilating operations. In every case of doubtful sufficiency of space to admit of a living birth, we are indeed not only permitted, but imperiously required, to give the case the benefit of whatever delay may be safely extended to it. But in cases affording no possible chance of such an issue, we should have recourse to the use of the scissors, and such other suitable embryotomy instruments as might be required, as soon as the orifice of the uterus might be sufficiently dilated to admit of their convenient and safe employment. There are two unquestionably great evils which might arise from delaying this important duty too long; viz. first, great irritation of the parts concerned in the labour, amounting possibly to contusion of their tissue, before the commencement of any operative proceeding; and, secondly, suspended or exhausted action of the parturient organs, in the absence of which the operator might find it extremely difficult to accomplish his purpose.

10. Embryotomy, in common with all other operations of midwifery, should be performed SLOWLY. The paramount obligation of this rule has been already so much insisted upon, that it need not be further illustrated in this place.

11. Embryotomy operations should not be performed at all, where they could not be performed with some chance at least of a favourable issue to the

mother; nor even where that chance might not very decidedly preponderate over what might be afforded by the Cæsarean operation; and therefore in the author's opinion, they should never be undertaken in cases of extreme distortion of the pelvis, without the sanction of a competent consultation.

12. In having submitted to his professional brethren the several new instruments and the other new forms and modifications of instruments already known, which have been delineated or described in the foregoing pages, it has been the author's principal object to provide the means of ensuring a greater degree of safety to the more important operations of midwifery than has hitherto generally attended them. How far he has succeeded in that object, he must now leave to the judgment of his more experienced readers.

### OF THE CÆSAREAN OPERATION.

In an appendix to Rousset's work, De Partu Cæsareo, published in 1588, Bauhin makes the assertion that Eliza Alesspachen was the first subject of this operation, and that it was performed on her by her husband, who was a cattle-gelder, in the beginning of the sixteenth century. In the year 1581, M. Rousset published the first edition of his work. In the second edition the reader may observe that he had collected sixty-four successful cases of the same operation. By this activity on the part of its earlier propounders, its reputation rapidly extended over the most civilized parts of Europe. The more eminent surgeons of France at that period were Ambrose Paré and Guillemot, who were so much influenced by the high encomiums lavished upon it by the German writers that they gave it their patronage, and each of them once performed it on patients of their own. The operation however was unsuccessful in each case, and both those gentlemen, from being its well-wishers and patrons, became active enemies to its future adoption and extension. Its name probably led to the supposition which laid the foundation of the assertion which prevails rather loosely in the profession, that Cæsar owed his birth to a section of this kind, of which however there is no satisfactory evidence in history. It was at all events first performed in Germany, and being of capital importance, it was, agreably to the language of the country, called Imperial or Cæsarean. It has been performed with various success, since its first introduction in the earlier part of the sixteenth century, perhaps in every country in Europe. In the British Islands it has probably been performed about twenty times; but it would seem unfortunately in every instance, with the exception of the celebrated case of Alice O'Neil in Ireland, Edin. Med. Ess. vol. v. p. 360; and the woman in Mr. Campbell's grass-plantation at the ferry between Kingston and Spanish-Town in Jamaica, Moseley on Tropical Climates, p. 568; and also probably the Blackburn case, as communicated to the Medical Records and Researches, p. 154, by Mr. Barlow. The subjects on which this operation has been performed have been, living women of forms so distorted as to disqualify them from becoming mothers of living children by the natural passages; and subjects recently dead, with a

view of enabling the operator to rescue the offspring yet living, from being involved in the mother's fate. The practice of this operation in different countries exhibits such a confusion of objects, and such a discrepancy of opinions as to its legitimacy, that it is quite shocking the lives of so many women and children should remain at the mercy of so much uncertainty. It is generally believed in this country, that it is even to this day considered good practice in most other European kingdoms in every case of so much distortion of the pelvis as to be incompatible with a living birth by the natural passages, that the Cæsarean operation may be lawfully had recourse to for the benefit of the child. That this doctrine should be adopted in practice in Catholic states is not much to be wondered at, considering the paramount importance attached in those countries to the value of the rite of baptism as a means of salvation to the soul of the unborn infant; but that it should be insisted upon in the Protestant countries of Germany, where the same doctrine is presumably less strictly maintained, is a matter very much to be deplored. It is a common notion on the Continent that the proportion of recoveries of the mother from the consequences of this operation, are to the deaths, as one in five, which however the author considers as great exaggerations of the actual fact. Baudelocque, who was a strong partisan of this operation, acknowledged and proved by innumerable examples, that in his time, in France, the deaths were in proportion of nine out of ten of all who were made the subjects of it. It is become the established practice of this country never to propose the Cæsarean section excepting in cases of admitted impossibility of delivery by the natural passages compatibly with the eventual recovery of the mother. There can indeed be but a small proportion of cases where it might be in any degree proper to depart from the obligation of this rule; but inasmuch as this small proportion seems to the author to have a positive existence, it would appear to be the duty of the profession to give it their most candid consideration. One of these cases is the example given by Dr. Denman, that of a woman who might repeatedly put herself in a situation to be impregnated after having previously acquired the fullest evidence of its being impossible for her to be delivered of a living child; by which she exposes her living offspring to the infliction of the fatal operation of craniotomy, choosing in the mean time not to risk her own life by becoming the subject of the Cæsarean section.

We might again suppose a case of extreme distortion of the pelvis in a woman, condemned either by the laws or by the recognised influence of disease, speedily to lose her life; as for example, in a case of advanced mollities ossium, or a rapidly galloping consumption, from which there might be no hope of recovery, nor even for many days or weeks of prolonged existence. It would appear proper that in any of those cases, the more valuable life of the child should be ensured by its abduction from the abdominal cavity by means of gastrotomy, or even by the Cæsarean operation, rather than that the mother's life, so almost totally destitute of value, should be preserved at the expense of the child, which

the hypothesis supposes must be sacrificed. In consideration of the valuable obstetric instruments, and especially of the osteotomist, now in the full possession of the profession, few cases can be expected to occur where it might not be possible to deliver by the natural passages. For the benefit of such cases it will of course be expected that we should give a few directions for performing the Cæsarean section. When had recourse to after the sudden death of a pregnant woman, for the benefit of the surviving child still within the uterus, few directions can be required; as the mere object in that case would be to bring the child out of the abdominal cavity as speedily as possible. For the sake of both living subjects when the chance is sought of securing the preservation of the lives of the mother and child, the following remarks might perhaps suffice. After an adequate consultation shall have decided upon the operation, the liquor amnii should be withdrawn by way of the vagina by stiletting the membranes, and the contents of the bladder removed by the catheter. The pains of labour having pretty fully declared themselves, the incision through the integuments of the abdomen is to be at once undertaken. Its locality should be the linea alba, of which it should occupy at least six inches and a half or seven inches, and on the side of the median line opposed to that in which the placenta might be supposed to be attaching. Its commencement from below should be sufficiently distant from the bladder, to ensure that organ from the risk of being wounded. The first incision should merely pass through an inch or two of the integument and cellular membrane to the peritoneum, which should be carefully dissected, and an incision made in that tissue only of sufficient dimensions to allow of the introduction of ONE finger into the abdominal cavity. The index finger will then be to be used as a conductor to guide and to give security to the remaining part of the incision. Whilst this is doing, the assistants in the operation should of course be required to guard against protrusion of any part of the intestines, tines, and to retain the several viscera as much as possible in their natural position. Any considerable artery which might be wounded during the first incision should be taken up and secured by ligature before it would be right to proceed further in the operation. The next step would consist in making an incision into the uterus, which on the supposition of the liquor amnii having been discharged, might admit of being an inch shorter than that through the integuments. On laying open the abdominal cavity, the hand should be forthwith introduced into the uterus in search of the feet, and the child quickly separated, and removed from the mother by bisection of the umbilical cord. From the infliction of so much violence it might be expected that the uterus would speedily contract, and throw off the placenta; but if not, the hand should again without delay be introduced to effect its artificial separation. After its removal a fine sponge should be made use of to take up any small quantities of fluid, whether blood or liquor amnii, which might escape during the operation. In the event of the uterine incision interfering with the locality of the placenta, such interference should if practicable be avoided or remedied; and in case it might

be found impossible to select any other place for making the section, the practitioner should first make a very limited incision through the walling of the womb, by which he might introduce his finger for the purpose of separating the placenta from so much of the uterine surface as he might be able to calculate would be in the way of the bistouri. Under these circumstances the child should be withdrawn if possible by its feet; and by means of as little of the hand introduced into the uterus as might be practicable, with the view of causing as little separation of the placenta as possible, until the living part of the ovum should be completely removed.

The wound in the uterus has been variously treated by different surgeons; some having employed one or more ligatures to keep its edges together, while others have entirely dispensed with their use. The author feels himself disposed to refer this matter entirely to the consideration of operating surgeons. He thinks, however, that the edges of the wound in the integuments should be brought and kept together by means of two ligatures; while in some cases preferably perhaps by three; observing, in that case, to preserve sufficient room at the depending part of the wound for the escape of purulent matter, or any other fluid which might be effused along its course. The patient of course should be subsequently kept on low diet, and in a state of great quietness both as to mind and body; and generally, and in the fullest sense of the expression, be treated antiphlogistically. Considering the Cæsarean section to be, in point of fact, almost completely superseded in this country, the author thinks it quite unnecessary here to prolong the consideration of the subject.

# CHAPTER XVII.

## OF THE DISEASES OF THE PUERPERAL STATE.

The first inconvenience which usually occurs to a woman speedily after delivery, is a slight disposition to fainting; and when it occurs at all, it is apt to succeed the birth of the child almost immediately; and is probably the consequence of the uterus being somewhat suddenly emptied, and is therefore analogous to the fainting which succeeds to the operation of paracentesis of the abdomen, in cases of great previous enlargement and distention of that cavity from ascitic dropsy. When fainting takes place soon after delivery, and when it is the effect simply of the cause just noticed, it is a symptom of a merely temporary duration, requiring no particular treatment. The admission of air into the room, the application of a bottle of hot water to the feet, and the exhibition of small quantities of some mild cordial, or a draught of cold water, will generally suffice to restore the patient to a state of comparative comfort, and at all events to a sense of security. No stimulants should be exhibited for this very unimportant symptom, as they might perchance, if given in the quantities which nurses in their discretion might choose to exhibit, excite the circulation, and thereby promote hæmorrhage. In cases of considerable fainting however, the circulation often experiences great reduction of strength, which should ever engage the instant attention of the medical practitioner; inasmuch as syncope from loss of blood might by possibility prove the cause of sudden death. An extreme degree of syncope is indeed in a majority of cases an effect, either of profuse hæmorrhage, or of rupture of some vitally important tissue; although cases of sudden death have sometimes occurred in the puerperal state, for which the nicest examinations subsequently have not been able to detect an adequate cause. The author has already had occasion to notice this fact. There have been few persons, extensively employed in the practice of midwifery for any considerable number of years, who have not met with repeated examples of fatal syncope in the course of their practice. The late Dr. John Sims once reported to the author, that he scarcely knew of any practitioner of extensive experience and eminence in his profession, who had not had the misfortune, on one or more occasions, of meeting with this formidable variety of syncope. The best treatment that could be advised for the relief of faintings after delivery, in addition to the exhibition of draughts of cold water, and some of the mildest cordials, as recommended in a former page, is the firm application of

a suitable compress and bandage to the abdomen, together with active friction of the extremities. The practitioner will feel it his duty, no doubt, as a matter which might have no little influence on his own reputation, to pay the earliest possible attention to the condition of his patient in respect to flooding.

After the expulsion of the placenta and the whole business of the delivery shall have been completed, many women become the subjects, in the course of a quarter of an hour subsequently, to the recurrence of painful contractions of the uterus, analogous in respect to their periodical returns to the throes of labour. From this analogy of their character to the proper pains of the parturient function, and from their occurring after the pains of actual labour, they have been not improperly denominated AFTER-PAINS. It may be noticed, as a striking peculiarity of these pains, that they do not occur after FIRST labours, and, moreover, that they seldom fail to present themselves after all succeeding labours. Such at least is a general rule, although not without some rare or very occasional exceptions. It is difficult to explain this difference of results, although it would seem to be obviously connected in some way or other, with peculiarities of condition of the uterus, in the respective cases of first and subsequent labours. Some writers have supposed, that the absence of after-pains, after first labours, might be imputed to a power then possessed by the womb, of contracting more firmly and more completely than subsequently, by which it might be able to rid itself of its lochial blood at once, and without the necessity of further contractions; whereas after future labours it might not be competent to contract in the first instance with the same vigour as formerly, and therefore might admit of the retention, in the form of coagula, of some of the earliest effused lochial discharge, which then might be expected to require repeated contracting efforts of the uterus to expel them. Added to this explanation might be noticed, the utility of the painful contractions of the uterus, called after-pains, towards laying the foundation of that reduction of magnitude which it is destined to attain, at the completion of the puerperal state, or, in other words, in four or five weeks subsequently to the delivery. In the greater number of cases, after-pains might be represented as being of a tolerably mild character, although in most cases of sufficient amount to induce the patient to wish to have them moderated. Pressure of the abdomen, effected by compress and bandage, seems to be productive of little advantage in these cases; and it has been long the practice in this country to exhibit opium in successive doses to attain that object. It is not necessary here to prescribe any particular formula for that purpose; the quantity of opium to be given at a dose would depend upon circumstances, as upon the state of the circulation, or of the nervous system of the patient, or upon the general physical irritability of her constitution, or upon her condition as to the degree of her fatigue after her labour, or perhaps on the hour of the day, or the actual approximation of the night, when she might be required to enjoy a sound sleep for a series of hours. It is the common practice of the profession to exhibit about eight or ten drops of laudanum, or of

opium in any other form, in the same proportion, every six hours. In peculiar cases, and to subdue more than ordinary irritation, it might however be permitted, and should be the practitioner's duty, to exhibit it in much larger doses, as in half-drachm, or even in drachm quantities of the common tincture.

Some women are much more liable to after-pains than others, and also, in some rare instances, to an extreme intensity of their violence. Under those circumstances opium might not suffice to subdue them, nor very much to mitigate them; when the practitioner would find great advantage from the use of fomentations with flannel wrung out of the hottest water, or of any of the decoctions usually recommended and applied as hot as could be well borne. In the West Indies, the Creole midwives employ fomentations made of port-wine for this purpose, under the impression, that the wine is the ingredient to which they should ascribe the principal efficacy of the formula. These fomentations should be used, not only of a high temperature, but for an entire hour or more at a time.

Of the Irregularities of the Lochial Discharge.—On the removal of the placenta the vascular tissue, by which that mass is connected during gestation with the internal surface of the uterus, is torn asunder; and it is obvious, that such a separation must be attended with an instant escape of the greater part of the blood which the vessels in question had contained up to the moment of their rupture. Then it is that the lochial discharge is said to commence. But the strong determination of blood to the uterus at that period might be readily presumed to furnish a considerable oozing from the part of the surface to which the placenta had been adherent. Such oozing should be considered as furnishing the material of the lochial discharge. On an average of cases, the amount of the secretion, as this discharge has sometimes been called, is not very abundant; being sufficient only to soil about half-a-dozen napkins in the course of the first twenty-four hours. It diminishes considerably in quantity during the second day after the delivery, and still more during the third and fourth day, when for the most part it begins to assume a visible change of colour. In the cases of women whose habit it is to menstruate sparingly, the lochial discharge is generally furnished in less quantity; whereas persons whose habit it has been to menstruate more copiously, the lochial discharge has also been in more profuse quantities. There are cases recorded of the almost entire absence of the lochial discharge, without however being attended with any inconvenience. After having sustained this evacuation for five or six days, women generally expect to be in a great measure relieved of the inconvenience of it. Before however it entirely ceases, it is found greatly to diminish in quantity, and to assume a visible change of its colour; first from red to brown, and at length into a lightish green, which, in a certain proportion of cases, the subjects of them being of a delicate texture, have been known to tease and harass the patient for many weeks. Women refusing to perform their natural function of

lactation, are especially subject to the inconvenience of this excessive fluor for weeks and months after their puerperal period, and also to uncertain returns, even of the lochia in their sanguineous form. The continuance of the healthy lochia, for four or five days after delivery, and then their gradual diminution in quantity and final cessation, should generally be considered as an evidence of the patient's prosperous recovery; whereas their total absence or sudden suppression might be looked upon as a warning that some disturbance might be about to commence in the system; and that is the point of view in which they should be looked at with most practical interest and anxiety by the medical attendant, inasmuch as the non-appearance, or too early suppression of the lochial discharge, is almost always a forerunner as also an accompaniment of the fevers incident to the puerperal state.

Of Inflammation of the Uterus.—Acute inflammation of the organs immediately concerned in parturition is comparatively so rare an occurrence, that its infrequency has often excited the admiration of medical men. The reason of this extraordinary fact may probably be found in the antiphlogistic offices of the lochial discharge; for when this discharge does not appear, or having appeared is suddenly suppressed, the uterus is very apt to become the seat of irritation, and of actual inflammation of its parietes, in common with its contiguous tissues. Inflammation of the uterus has sometimes taken place during labour, from the impediments opposed to the process, or in consequence of the violent struggles employed to accomplish it. Hence the greater number of severe labours are attended with inordinate action of the heart and arteries. In cases of this kind inflammation of the uterus may be ushered in by a violent shivering, before the process shall be completed. More frequently, however, the disease is a result of mismanagement on the part of the persons in attendance during the convalescence; and then it ordinarily supervenes, about the third or fourth day, rarely so late as the fifth, after delivery. The rigor is often attended with harassing sickness and vomiting, and these symptoms are soon followed by a violent and often a throbbing pain in the region of the uterus. The lochia, if not previously suspended, become speedily suppressed; and the ordinary symptoms of an intensely pyrexial state are soon established. The character of this inflammation during its acute stage is that of high tone, by which it comes to resemble, in several of its most prominent circumstances, acute rheumatic fever. The abdominal pain is in a great measure limited to the uterine region, and seldom extends upwards to any great distance beyond the navel. Attendant on the excessive charge of blood which at this time is determined to the uterus, the patient becomes sensible of so great an increase of the temperature of the part, as to make her complain of an extraordinary perception of heat in the uterine region, which indeed the practitioner also may easily recognise, by the application of his hand to the hypogastrium. After the cold stage has subsided, the skin at first is found very hot and

dry, and then the pulse may be expected to be hard, strong, and remarkably voluminous; and this state of things often continues for many hours, if not previously subdued by judicious medical treatment. Most abdominal inflammations during the puerperal state are accompanied by a headache of more or less intensity. But these headaches differ from each other in different cases, as the inflammation affects different abdominal viscera. The headache which especially accompanies inflammation of the uterus, occupies either a superior part of the head, or one of its sides; and occasionally but more rarely an occipital or a parietal portion of it. While suffering more or less intensely from one or other of these characteristic forms of headache, the patient is very apt to complain of a peculiar sensation of the surface of one side of her body, an idea of which she sometimes attempts to convey, by calling it a creeping coldness gradually ascending along the integuments towards the head. The cold stage at the commencement of its accession is accompanied by a remarkable shrinking of the features and reduction of the pulse. The rigor, after having continued from half an hour to an hour, is followed by a universal heat of the body of great intensity; and that part of the disease may well be called its hot stage. If at this period of the complaint the patient shall have been inactively treated, it is succeeded by a profuse perspiration; by which, under similar circumstances of inactivity in the management, she may be very much harassed for many days.

The principal predisponent causes of inflammation of the uterus are, 1, a state of high-toned action of its vascular system, induced by the severity of its previous exertions; and, 2, a state of contusion of its tissues in consequence of inordinate pressure, to which it is sometimes exposed during the transit of the child's head into and through the pelvis. One, if not both, of these causes of predisponency to the disease might also be expected to operate more directly as an occasional cause. The more frequently observed occasional causes are however some striking mismanagement by the nurse, or other attendants; such as allowing the patient the use of improper foods and drinks, exposing her to too high a temperature, either by keeping too large a fire, or oppressing her with too great a quantity of bed-clothing; or, on the other hand, by permitting her incautiously to be exposed to the action of cold, or perchance to indulge in violent or unnecessary movements of the person; by giving her leave to get out of bed prematurely, and to sit up for many hours, or beyond her strength, during the first week after delivery. To these may be added the exercise, on the part of the patient herself, of the more turbulent passions and emotions, of whatever kind, and by whatever cause excited. The author recollects a remarkable example of the influence of an excited state of mind in the production, as it afterwards proved, of a fatal inflammation of the uterus. On the morning of the second day after the delivery, the lady's medical attendant violated a common and a very proper rule of ceremony, in not waiting to be announced, but hurried into the patient's room before she was prepared to

receive him. She was engaged at the moment in responding to one of the calls of nature, and was therefore greatly surprised and alarmed at the equally unexpected and unwelcome visit of her medical friend. A tremendous shivering almost momentarily seized her; and in about three days subsequently she sank, a much-pitied victim of the severe but unintentional injury which was thus inflicted upon her.

Of the Treatment of Inflammation of the Uterus.—The fever which accompanies puerperal hysteritis, it has already been stated, is usually one of high tone, and therefore one which must be expected to require considerable activity of the treatment. If the services of the medical attendant be speedily obtained, he might often have it in his power to cut short the disease, or at any rate very importantly to mitigate its violence, in the course of a few hours. Bleeding in ample quantity should be had recourse to as a first measure. This rule was in former years modified with a qualifying addition to it, that it could not properly be undertaken until after the establishment of the hot stage of the malady. Since Dr. Mackintosh, of Edinburgh, has enlightened the profession on the innocence and even the utility of bleeding in the cold stage of fevers, the author has always had recourse to that measure, at however early a period he has been consulted upon the subject; and the experience of the results for several years has fully convinced him of the excellence of the practice. When bleeding is employed in these cases on an adequate scale, in the cold or at an early period of the hot stage, it seldom fails to ensure, in a very short time, the attainment of the object for which it is employed. The disease however being, as has been repeatedly stated, one of a prominently sthenic form, the reader will be prepared to receive the impression, which the author wishes to convey most earnestly, as to the propriety of a vigorous performance of this part of his duty. The patient must be bled ad deliquium; and nothing short of a scrupulous attention to this injunction can fully suffice to meet the demands of the case. But if she shall not have thus been vigorously treated during many hours, one bleeding may possibly prove insufficient completely to subdue the excited state of the circulation. Although the pain of the abdomen might be very much mitigated by one bleeding under such circumstances, it would often happen that the pulse would in a few hours gradually get up again, and the former state of excitement be re-established with a degree of violence scarcely inferior to what it had been before the bleeding had been resorted to. In such a case, the vein must be opened again, and permitted to bleed until full fainting shall be induced. This effect will be obtained at the expense of a much less quantity of blood than was found necessary in the first instance. If, after the lapse of about two hours subsequently to the second bleeding, the symptoms should remain still obstinate, the author would recommend the application of from fifteen to twenty leeches to the hypogastrium. The pulse still continuing frequent, with an irritable unsoftened tone of its action, the next important measure to be

adopted, would be the exhibition of an emetic, consisting of one grain of tartarized antimony and a scruple of ipecacuanha; which might be expected not only to dislodge such alimentary matter from the stomach, as it probably could not well digest, but also to produce a valuable sedative effect upon the arterial system. After the action of the emetic shall have entirely ceased, it will still remain for us to prescribe an aperient, which should consist of five grains of calomel and a scruple of jalap, or of half a ounce of spirit of turpentine, exhibited frequently in drachm doses until free purging shall be induced. The author has generally employed turpentine as a purgative, especially in cases of inflammation of the uterus, ever since its introduction into the profession by Dr. Brenan as a remedy for puerperal fever. If the above measures of treatment be employed with adequate activity, very few cases of high-toned hysteritis will fail to be subdued. But unfortunately we sometimes meet, in consequence of want of activity in the beginning of the treatment, with some examples of the same disease of a more subdued character, and under more obscure and anomalous forms. Upon accurate examination of the history of such cases, they will be found to implicate parts of the vaginal tissues in common with those of the uterus; or else to extend from the parenchyma of the uterus to its lateral appendages, so as to involve the peritoneal coverings of the greater part of the entire uterine system. For the treatment of these forms of the disease the general bleeding should be more moderate, and that by the application of leeches more vigorous, and if necessary more frequently repeated. The bleeding after the removal of the leeches should be followed up by an unremitting and assiduous use of fomentations, and mild but efficient purgatives.

Of Puerperal Peritonitis.—This inflammation of the peritoneum during the puerperal state is one of the most important diseases incident to that period. So simple and uniform as we find it to be in its cause, it is nevertheless productive of a considerable variety of phenomena, as well as of degrees of intensity of the fever with which it is identified, and which is usually denominated puerperal fever. In a small proportion of cases, puerperal peritonitis has been found accompanied by symptoms so mild as almost to admit of the patient's recovery without the interference of art. In other cases, it has been a disease of so violent a nature, as to terminate fatally in the course of a few days after its commencement. But the principal difference by which its varieties are distinguished in different cases, would appear to consist in its character of being either, first a disease of high tone, and secondly, in that of its being a fever of almost the lowest character within the range of our professional experience. Founded upon this diversity of its character in different subjects, some writers have confined their application of the term peritonitis to the sthenic form of the disease, permitting that of puerperal fever to be applied only to the lower-toned variety of it. All the symptoms attendant on the malady would lead to the opinion, that under all its circumstances, it is at least in part, if not wholly, to be imputed to inflammation of the investing membrane of the

peritoneal cavity for its proximate cause; while experience has confirmed this inference by inspections, after death, of the parts presumed to be the seat of the inflammation. Thus are we compelled to admit that a disease of great variety of character has one common cause for its origin, and that the diverse forms of the malady, apparently essentially connected with this one original source of its existence, must be founded upon modifications of the inflammatory action produced by some accessional influence or influences, the nature and specific modes of action of which have not yet been ascertained. We may plausibly enough presume that simple inflammation, unaccompanied by the action of the unknown principle just mentioned, would produce simple peritonitis, a mild disease often admitting of being repressed and subdued by the ordinary treatment of active inflammations; and therefore that the most diversified and dangerous form of peritonitis might require the co-operation of the morbid agency just alluded to, although we are yet totally incompetent to characterize the nature of the morbific principle here referred to, and therefore not at liberty to assert its unity or identity in different circumstances: yet the admission of its existence would appear indispensable to enable us to arrive at any satisfactory theory of the mode, or rather modes, of production of so multifarious a disease. The author has been for many years of opinion that the above principle, whatever other properties it may possess, must really be associated with the power of communicating the disease from subject to subject. Hence, admitting the fact that there are examples of what might be called sporadic cases of puerperal peritonitis, which are not attended with any danger of being communicated to individuals residing in their immediate neighbourhoods, it is equally certain that, in other cases, an experienced eye would be competent to trace symptoms which would be enabled at once to recognise in its effects the presence of a malignant and communicable disease.

In the simpler forms of peritonitis, the disease is ushered in by a rigor of moderate duration and of some severity; which is speedily followed by tenderness of the abdominal surfaces. In some few cases however of the disease, even in its less dangerous forms, the shivering is so inconsiderable as to elude the notice of the nurse, and not to present itself strongly to the attention of even the patient herself. In those cases, the symptom usually first complained of, is a soreness of the abdomen, which is not unfrequently discovered rather by accident than on account of the violence of its first attack. It generally however increases very rapidly, so as to occasion much suffering, and an indisposition to movements or disturbance of any kind. Soon after, or even identified with, the commencement of the disease, is a headache of a peculiar character, which never fails to accompany and indeed to form a prominent part of the malady. Of this headache the seat is the sinciput, chiefly the part of the forehead at and immediately above the eyebrows. So confined to this locality is the headache in question, that it is usually considered one of the most positive elements of our diagnosis. The author in the course of many years' experience has met

with two or three instances of a headache in puerperal fever, which extended to other parts of the head, and even as far as the occiput and nape of the neck inclusive. But these are very uncommon forms of it.

There are always present the ordinary symptoms attendant on the pyrexial state; such as an increase of the temperature of the body, a dry skin, with some degree of difficulty or rather an uneasiness of the function of respiration; the chest not being expanded so fully as during health. In some degree this effect may be imputed to the influence simply of the febrile state, but also and perhaps chiefly it would seem to the necessity which the patient feels of guarding against the painful pressure of the diaphragm against the inflamed peritoneal surfaces of the abdominal viscera during full breathing. The state of the circulation is found very materially to depend upon the particular type of the fever. When ushered in by a considerable rigor, the pulse during the establishment of the sthenic form of the disease is speedily raised, both in respect to strength and frequency; but if unsubdued by active treatment in the beginning, the rapidity of the circulatian increases in geometrical progression; and if left totally unassisted by any efforts of art, the disease proceeds to accumulate from day to day in power and fatality, till it destroys the patient in about ten days, or perhaps something less, after its commencement. This form of the malady, during the earlier days of its existence, exhibits no symptoms so diagnostic of its character as could decidedly lead a mere looker-on to suspect, or at least positively to recognise, its nature. But if suffered to proceed without interference for the first forty-eight hours, it might be expected that its symptoms would present features of its identity which could not easily elude recognition. Whereas, in the low-toned form of the fever, its peculiar features are for the most part cognizable from the commencement, and throughout the whole of its course. In all its varieties, the secretions are usually diminished or greatly vitiated. The state of the skin is generally too dry; although, in some cases of the sthenic form of the malady, it is partially suffused with a morbid excess of perspiration. In the same form of the disease the whole of the system is considerably raised in temperature, not excepting even the extremities; whereas, in cases of the low-toned fever, it is only the head and trunk of the body that are made subject to any morbid excess of it. The lower extremities, particularly from the knees downwards; the hands, and in many cases the arms, even as far as above the elbows, furnish at the same time the evidence of an excessive coldness, marked by what is commonly called cutis anserina. The milk, which is usually secreted in ample quantity on the second or third day after delivery, is either not secreted at all, or is yielded in exceedingly deficient quantity, after the accession of this disease. The urine also, which is produced in very diminished quantity, on being voided, exhibits a deep colour, and soon after deposits a copious lateritious sediment. The lochial discharge, which ought to be abundant during the first four days after delivery, becomes, speedily after the accession of the fever, dimi-

nished in quantity, excessively offensive as to its fetor, and vitiated in all its other qualities. Among the diagnostic symptoms of this disease, we may especially notice the obstinately grave and anxious expression of the countenance; which would seem rather to indicate a physical depression of the spirits from passive suffering, than a state of anxiety arising from any considerations of a moral or sentimental nature. In again adverting to the twofold nature of the malady under consideration, the author takes the liberty of remarking that the low-toned fever, well denominated by the late Dr. John Clarke THE LOW FEVER OF THE PUERPERAL STATE, is the form of it which has most frequently prevailed epidemically in this and most other countries of modern Europe. Of the infectiousness of the disease in the form in question, the author has for many years ceased to entertain any doubt whatever. He has, on many occasions, witnessed its most manifest communication from patient to patient, and even from one district of London to another. Here it would perhaps be considered improper to furnish facts in detail in corroboration of a principle which has not of late been questioned by competent authorities. All the lying-in hospitals of the metropolis might most easily be made to furnish abundance of evidence on this subject, as well as all similar institutions in the larger towns and cities of Europe. The author cannot speak, with all the precision that he could wish, in respect to the sources of the infecting principle. In a district of the Maternity Charity in the Borough, the infecting principle was clearly traced to a case of typhus fever in an old man who had died in St. Saviour's workhouse. During one of the years when the author was obstetric physician to the Queen's Lying-in Hospital, the cause of the infection was carried thither by a female whose husband had died at their common residence, at some distance from that establishment, of a malignant fever. On several different occasions, both in hospital and private practice, the infection was very distinctly traced by the author to cases of acute erysipelas. In one instance he had every reason to believe that the infection of scarlet fever furnished the occasional cause of some of the most malignant cases of puerperal fever that he has ever seen. From what he has observed of the susceptibilities of puerperal women, he feels disposed to believe that their exposure during an early period of the puerperal state to any of the more considerable exanthematous fevers from specific influence, might involve them in all the dangers incident to puerperal peritonitis. When puerperal fever arises from causes admitting of detection, it may be stated, on the experience of the profession, that it proves ordinarily a highly dangerous, if not even a fatal malady.

OF THE APPEARANCES ON DISSECTION.—This scourge of the puerperal state is now pretty unanimously considered to be a fever dependent upon, or at all events inseparable from, a state of inflammation of the peritoneal BLOODVESSELS. In consequence of certain suggestions which occurred to him when his attention was specially determined to the subject of the proximate cause of phlegmasia dolens in the year 1817, the author has ever since felt disposed to believe, that the

tissue more immediately implicated in peritonitis is that of the ramules of the venous system of the peritoneum and immediate vascular connexions. In the latter years of his connexion with the Queen's Lying-in Hospital, now about fifteen years ago, he had several opportunities of confirming his suspicions on this subject by post-mortem inspections, and in all of those which were made the subjects of minute examination, the venous tissues of the peritoneum and of the lateral appendages of the uterus were found to be either highly inflamed or profusely charged with purulent matter. Such examinations were generally made in the presence of Mr. Chapman, the son of Sir John Chapman of Windsor, and of Mr. Lewis, now assistant surgeon to the Royal Maternity Charity, and a resident of Bunhill-row, who of course will be competent to confirm the statements here made. In the year 1825, similar opportunities were presented to the author in the practice of his obstetric school, of which the theatre was in Webb-street, Borough: and in order to authenticate his views, he availed himself of the kind services of Mr. Mangles, who for several years had been the assistant of Mr. Langstaff, and who at that time was employed by Mr. Richard Grainger to make preparations for his museum. On inspecting the body of a person who had died of a severe case of puerperal fever, he observed that one of the spermatic veins was greatly distended with purulent matter. Mr. Mangles was requested by the author to remove it, and in his best manner to make a preparation of it, in order to prove the fact of the author's assumption, that the venous tissues of the lateral appendages of the uterus and of the peritoneum generally were proximate seats of the disease called puerperal peritonitis. Mr. Mangles therefore by undertaking this duty, and performing it most satisfactorily, made himself an evidence that such views were expressly entertained by the author in the year 1825. How Dr. Robert Lee could report that the preparation in question, which was civilly shown to him at the University as forming a choice specimen in proof of an important point of pathology, unquestionably FIRST SUGGESTED by the author, was treated by him, the author, with indifference, is left to that gentleman to explain in the way most satisfactory to himself. Mr. Mangles is still living, but as he resides in the country, the author does not precisely know his present address; but from that circumstance no great inconvenience can arise, inasmuch as upon application, the address will be readily supplied by Mr. Langstaff. The author has from time to time, ever since the date of the above pathological invesigation, spoken of it in his lectures, and shown the preparation, now become one of more than ordinary value, to his pupils, with the exception of one unfortunate year, when Dr. Robert Lee honoured him with his attendance, in which, as that gentleman states, he did not show the specimen nor mention it, in his illustrations of puerperal fever. It is not necessary to dispute about a fact of this kind. The author is quite willing to allow it to be decided by an appeal to all the hundreds of students who have attended his prelections in midwifery ever since the year 1825, with the exception

of alone that year when Dr. Robert Lee was a member of his class. Can any gentleman be expected to be very communicative to another who had already shown great eagerness to transfer the humble merit of a pathological notice, first suggested by him, to the ampler stores of another labourer in the same field, reversing however, by such act, the more equalizing system of transfer practised by the celebrated Mr. Robert Hood of furtive memory, who stole from the rich wherewith to give to the poor? See Dr. Robert Lee's paper on Phlegmasia Dolens, Transactions of the Med.-Chir. Soc., vol. xv. p. 132.

Of the Treatment of Puerperal Peritonitis.—The essence of this disease under all its forms being indicative of an inflammatory source, it would seem plausible that its most suitable treatment should be by depletion. Accordingly, since the disease has been in any degree investigated pathologically, from the time of Dr. Hulme to the present period, the practice by bleeding has been occasionally and under certain circumstances resorted to. Inasmuch, however, as the phlogosis of peritonitis has more or less constantly been associated with a remarkable prostration of the powers of life, it is not many years since bleeding on an adequate scale has been employed as a remedy for puerperal peritonitis. For the introduction of this practice on intelligible principles and on a scale calculated to meet the magnitude of the evil, the profession is indebted to the late Dr. Gordon of Aberdeen, whose essay upon this subject will be found to contain the elements of all the effective practice, which without sufficient reference to Dr. Gordon has since in more than one instance been much too vauntingly recommended by his less meritorious imitators. If to the practice of bleeding as recommended by Dr. Gordon we add that of bleeding in the cold stage more recently urged by Dr. Mackintosh of Edinburgh, we embody nearly all that is valuable on the subject of this part of the treatment in a small compass. In all sporadic cases of the disease, and in a certain inconsiderable proportion of cases under its less favourable forms, as it usually appears in hospitals and in the more wretched abodes of the poorer classes of the population, an ample bleeding at the commencement of the disease might not very unreasonably be expected to effect a speedy solution of it; which indeed in such cases we find actually to correspond with professional experience. But much of the utility of bleeding must depend on the time of its adoption, and on the manner of performing the operation. If we suppose the patient to be bled while in the cold stage, and in adequate quantity to produce a decided impression upon the circulation, such a depletion might probably suffice at once to effect the subduction of the morbid action. And although the disordered actions were such as in other cases might be legitimately called the hot stage of fever, still if we suppose the lancet to be resorted to within six or eight hours of the commencement of the disease, the anticipation of much good to be obtained from such practice would be by no means an unreasonable one. The measure of the adequacy here supposed, must obviously have reference to the quantity of blood abstracted, and to the constitutional effects produced by

the bleeding. Complete fainting is one of its most favourable results, as well as a measure of its utility; and that state cannot ordinarily be expected to be produced in an adult subject of almost any fever at a less expense of blood abstracted than would amount to between twenty and thirty ounces. Such an average might therefore serve as a standard of approximation to the measure which it would be right to take during the first bleeding. If the patient by this operation should completely faint, it might be expected that she would derive important advantages from it; whereas, on the contrary, if we suppose the fainting to be imperfect, the pain of the abdomen to remain unmitigated, and the other characteristic symptoms not to have been materially relieved by it; the pulse to be accelerated or even to be disposed to resume its previous rhythm; such circumstances would subduct from the probability of its efficiency, so far at least as completely and at once to answer the purposes of its institution. When bleeding has the effect not only of mitigating, but of entirely removing the abdominal tenderness, we may reasonably hope that it will ensure us an early triumph over the morbid phenomena of the case. The utility of bleeding, as has already been intimated, is more decidedly observable in the sthenic form of the disease; whereas, on the contrary, the author has to lament that he has seen very many examples of its failure in hospital practice, where it had been had recourse to tentatively, more as a merely possible than a probable means of relief, in cases of the disease under its asthenic form.

A first bleeding producing valuable effects in greatly abating pain and subduing arterial excitement, and nevertheless proving insufficient to produce an entire solution of the febrile action, may often be repeated with great advantage, and its principle still further acted upon very beneficially, by the application of leeches to the hypogastrium, and the abdominal surfaces generally. The bleeding from the leeches may be considerably promoted by fomentation; which of themselves would be calculated to afford great relief to some of the most important of the patient's symptoms.

After a sufficient bleeding shall have been thus premised, much good may often be obtained by the exhibition of an active emetic.

Subsequently to the action of the emetic the bowels should be once well purged by a dose of castor-oil, followed up by a demulcent enema. In the event of failure of a full and ample bleeding to effect a decided reduction of the febrile frequency of the pulse, the author feels himself authorized to recommend strongly, with a view to the ultimate accomplishment of the same object, the exhibition, in regulated quantities, of DIGITALIS. Digitalis, in the quantity of about five-and-thirty grains of the powder, would doubtless in time effect an adequate reduction of the heart's action. But this quantity cannot be safely given in less time than fifty or sixty hours. The author, therefore, has been in the habit of prescribing it in the quantity of two grains with an equal quantity of the blue pill, to be given every three hours until the pulse shall be reduced to its natural standard

of seventy or eighty strokes in the minute. Digitalis thus exhibited may be safely recommended as a powerful auxiliary to the lancet.

Mercurial preparations have not unfrequently been exhibited as medicines of great importance in the treatment of the disease under present consideration; and if they could be exhibited in forms which might be depended upon for producing their specific effects sufficiently early in its development, they would no doubt exert a most salutary influence in arresting its progress.

Calomel and opium, in combination and in large doses of both ingredients, have been the form in which the author has most frequently exhibited mercurial remedies in puerperal fever; and he has the pleasure of adding, that he has occasionally attained his object completetly by their administration. Most frequently, however, he has failed, by not being able sufficiently early in the disease to produce any degree of ptyalism; it being indeed the fact that in the greater number of cases, the absorbents appear to be thrown into a state of effectual paralysis by the malady.

As to the use of turpentine, the author cannot say that he has had sufficient experience to enable him to speak strongly of its utility. When Dr. Brenan honoured him with his first account of it as a remedy for puerperal fever, it happened that the disease was very rife and fatal in all the wards of the Queen's Lying-in Hospital, to which he was then officially attached. He was therefore naturally induced to make trial of it in all the cases and forms of the disease which he had under his care at that time in the hospital. He was never more completely disappointed in the use of a new remedy strongly recommended, than he was on that occasion, in the whole course of his practice. But in fact he is acquainted with no remedial agent whatever, on which he could rely for the exertion of any considerable power, in warding off the event which must be anticipated, in almost all cases of the disease, when presented under the form of THE LOW FEVER OF THE PUERPERAL STATE.

OF EPHEMERA OF THE PUERPERAL STATE.—This fever, as its name implies, consists in the accession of pyrexial symptoms which may occupy only one day; or which, if repeated, will present themselves in an exasperated form during successive periods of between twenty and forty hours. The subjects of ephemera are usually very languid convalescents, from the ordinary incidents of labour and its immediate consequences. The symptoms are sometimes so strongly characterized as to lead to the suspicion of an intense inflammation, or at least of a high-toned inflammatory fever: but the malady has so seldom, if ever, proved fatal in its simple state, that we have scarcely the evidence of pathology to identify its absolute nature. It generally comes on some days after delivery, the patient in the mean time performing the duties of lactation and the other functions of the puerperal period very languidly and imperfectly. Its premonitory symptoms are, a frequent pulse, a sense of general uneasiness without being able to refer to any distinct pain either of an organ or of any particular region, a slightly furred and whitish tongue, depression of spirits, and

no appetite for food. In the midst of these circumstances, the first paroxysm commences with a rigor frequently of great violence and long duration; but sometimes with a quick succession of smaller chills. Each of these forms of what we may call the cold stage of this fever is followed by a hot stage of extraordinary activity. From a pulse of so much feebleness as scarcely to be felt during the previous cold stage, it rapidly rises during the development of the febrile action, so as to emulate, in the measure of its excitement, inflammatory fevers of the greatest intensity. Its increment of frequency also, from a hundred or a hundred and ten, which had marked the feeble state of health of the patient previously, to a hundred and sixty, is found at the same time to indicate the intensity of the hot stage, and especially to characterize the malady. The hot stage is followed as in intermittent fever by a profuse perspiration, which continues uncertain in different subjects for four, five, or six hours. During the whole of this stage of the paroxysm, the pulse is found to subside gradually to its former rythm of from one hundred to a hundred and twenty strokes in a minute, and to its former languor and want of volume, such as it was before the commencement of the attack. When twelve or fifteen hours shall have been thus occupied, the patient may be expected to recover her previous state of languid convalescence. But the first paroxysm, such as has been now described, may be followed by another, or even by an uncertain number of similar accessions; which in fact would constitute an irregularly intermittent fever, the irregularity principally consisting in the unequal duration of the intervals between the paroxysms.

The foregoing description applies with more correctness to the more violent febrile accessions which have been called EPHEMERA of the puerperal state; although it might be difficult to find a better designation to characterize diurnal feverish movements of a very inferior tone during the same period, but still very sufficient to interfere with the due progress of the patient's recovery. The different stages of these minor accessions are less violent and of shorter continuance. The pains which accompany the other symptoms of a paroxysm of ephemera, although expressly complained of in most cases, are probably nevertheless not so intense as those which are sustained during a fit of common ague. Their analogy in other respects is tolerably well marked; inasmuch as they are observed to occupy sometimes the head and nape of the neck, but most frequently the loins and back. The temperature during the hot stage as usually indicated by Fahrenheit's thermometer is scarcely ever under 105°. Although the perspiration which follows the hot stage of this disease is ordinarily exceedingly profuse; the author has never met with an example of its being attended with a miliary eruption on the surface of the body. The fever seems sometimes to be of a character to admit of mitigation, if not of entire removal, after the train of symptoms constituting its first paroxysm shall have been gone through; notwithstanding that the patient should be considered as being generally left by it in a state of great susceptibility of relapse.

The author must confess that he has no knowledge of the proximate cause of puerperal ephemera; and moreover that he must undertake the consideration of its TREATMENT with great diffidence. From the high-toned symptoms which in the greater number of cases he has observed to characterize the second stage of the disease, he has been occasionally induced to try the effect of free venesection; without however at any time satisfying himself that he has derived any decided advantage from the practice; but on the other hand, without being convinced that the interests of his patients were seriously injured by it. Upon the whole he should not, from his experience, feel himself warranted in earnestly recommending that method of treatment. The local pains which are complained of during the paroxysm, such as those about the back of the head, nape of the neck, and more frequently the loins, and hypogastrium, usually subside with the gradual decline of the pyrexial symptoms, so as to leave after its recession no indication for the use of blisters or of any other active topical remedies.

The author has usually exhibited blue pill in quantities of about ten grains daily with a view more especially of improving the gastric functions, but of course with no hope of being able immediately to subdue by its alterative properties the more intense and characteristic symptoms of the disease. For the attainment of the latter object, he has of late years exhibited opium in various forms, and generally in doses sufficient to produce the narcotic effect of the remedy pretty strongly; as in quantities of two grains of the pure extract, or in sixty or seventy drops of Battley's liquor for a dose. After the complete recession of a paroxysm, he has accordingly endeavoured to place his patient under the full influence of opium, and recommended the repetition of the same doses every four or six hours until it might be fairly calculated that the time for the accession of the succeeding paroxysm was gone by. He has thus in some cases kept his patients under the full influence of opium for some days, and thus, AS HE HAS REALLY BELIEVED, in the end enabled himself completely to subdue the disease. In the LESS strongly developed forms of the malady, he has however had reason to suppose that the treatment by the exhibition of large doses of opium has been less positively successful. When the disease occurs after the lapse of several weeks subsequently to the confinement, or is prolonged to the same period by a continued succession of paroxysms, he has generally found great advantage from recommending a change of residence; which accordingly in his own practice has been from London to one of its most sulubrious neighbourhoods. Upon the whole, however, he must acknowledge his incompetency in a large proportion of cases to ascertain the nature and causes of the disease, or satisfactorily and with confidence to direct its treatment. It is said to have sometimes terminated fatally, by the induction either of dropsical effusions into the thoracic or abdominal cavities, or otherwise by laying the foundation of diverse forms of chronic disease. In his own practice, however, he has never met with a single example of a fatal issue of it, either directly or indirectly.

OF PUERPERAL INTERMITTENT FEVER.—This disease is to be distinguished

from ephemera by the fact of its being always, as the author believes, accompanied and followed by severe inflammation and suppuration of membrano-tendinous tissues. The author was some years ago concerned in the treatment of a case which, from the circumstances reported of the previous labour, had probably been unnecessarily exposed to operative treatment. The forceps were kept in application for SEVERAL HOURS, during which period they were from time to time violently adducted. The birth of a still-born child was at length the result of this operation. The mother moreover became the subject of intermittent puerperal fever on the subsequent day; when she was seized with the most violent shivering fit that the author ever witnessed. The cold stage was followed by the utmost intensity of the ordinary symptoms of the hot stage, producing what might ALMOST LITERALLY have been called a burning fever; whilst the third or sweating stage bore a striking resemblance to the analogous period of the common ague of marshy countries. After the recession of the febrile symptoms for about fifteen hours, a second paroxysm commenced with a rigor of equal severity with that which introduced the disease, and of at least an hour and a half's duration. This paroxysm went round the entire circle of its phenomena like the preceding; and was afterwards succeeded by similar paroxysms at intervals of from fifteen to thirty hours, for a period of upwards of six weeks, when the inexorable malady destroyed its unfortunate victim. The body was inspected after death. The perineum was found to have been torn during the labour, and consequently shortened about half an inch. But in other respects, the parts about the external orifice were in a perfectly sound state. The uterus had contracted to its ordinarily unimpregnated size, and upon making an incision through its anterior wall, its tissue presented every appearance of health. Guided by a slight appearance of vascular fulness of the surfaces of a part of the intestinal tube, in the neighbourhood of the right ovary, the body of the womb was brought forward into a more distinct view; when the ovarian pinion of the broad ligament of the same side was found greatly enlarged, and distended with what was distinctly felt to be a fluid. The size of this cyst was at least equal to that of a large hen's egg, and upon cutting into it, it was ascertained to be charged with about an ounce and a half, or possibly two ounces of laudable and strongly concocted purulent matter. The cyst was every where so entire in its texture as to present no appearance of probability that it might at any early period have spontaneously given way.

On reporting the result of the above case to the late Dr. Babington, that gentleman assured the author that he had some years previously been a party to the inspection of a subject who had sustained precisely the same symptoms during life, and had died from what was ascertained to have been inflammation and suppuration of the same tissue. The encysted matter in both cases was deep seated and inclosed within the peritoneal covering of the ovarian ligament. In all possible respects, therefore, the two cases presented a perfect identity of circumstances.

A poor woman was for several weeks the subject of an intermittent fever, similar in almost all its phenomena to those of the two preceding cases. She died, and a post-mortem examination was permitted. After the removal of the abdominal integuments, an evidence of considerable disease manifested itself in the neighbourhood of the left ovary, where there was found, upon laying aside the viscera which concealed the diseased parts, a pretty extensive abscess, containing very offensive purulent matter, together with the remains of once organized tissues, which had the appearance of having been broken down by the suppurative process. All the lateral appendages on that side of the uterus appeared to have been implicated in the disease.

The author could mention at least two other cases bearing a strong analogy both in respect to their symptoms and final results to those of the subjects of the above narratives, but enough has been already said to determine the attention of pathologists to the supposed proximate cause of the malady. The only inference that could be made from the above cases, with a view to a future more successful prophylactic treatment, would seem to be the importance of a rigorously depleting practice during the urgency of such severe labours as might be likely to lead to the production of a disease of this kind.

Of the Irritative Fever of the Puerperal State.—The author has ventured to give this designation to a febrile disease of the puerperal state, of which the following are the principal attributes:—1. An excited state of the heart and arteries for an uncertain period before the accession of labour. 2. An unusual apprehension of danger, or rather the confident belief of an approaching fatal event, also entertained for an uncertain period of several weeks before the declaration of the process of parturition. 3. An obstinate continuance of the same symptoms, both during labour and subsequently to that result. 4. Proofs of much morbid determination of blood to the head both before and after delivery; but without delirium. 5. Perfect vigilance. 6. A disease of about eight or ten days' duration subsequently to the delivery; but with full possession of the intellectual powers throughout the whole course of the malady. 7. A fatal termination, with rare, if with any, exceptions.

In respect to the treatment of a disease of so formidable a character, it is obvious that nothing very satisfactory can be offered. The author has seen it treated in some cases with great vigour; and in others in the most passive manner, as well as on principles which seemed to suggest intermediate measures, which were accordingly resorted to; but in all, excepting in one instance, of which he had some doubt as to the accuracy of his diagnosis, the event proved unfavourable. On inspection of the subject after death, he discovered, in several cases, a state of the encephalon similar to what is found in fatal cases of hydrocephalus, consisting in a great moisture of the meninges and other surfaces of the brain, and in effusion of profuse quantities of limpid fluid into the ventricles and theca spinalis. On one occasion, some years ago, he intrusted a post-mortem examination of a case of this kind to the late Mr. Taunton of

Hatton Garden, when that able anatomist reported that he examined the whole of the subject carefully, the head inclusive; but that he had not been able to discover any traces of disease in any of its viscera or cavities.

Of Puerperal Phrenitis.—This malady presents itself for the most part within twenty-four hours after the birth of the child. The patient seldom enjoys any sleep during the first night after her delivery; but as it frequently happens that this period is, in ordinary circumstances, one of comparative restlessness, the incident is often overlooked; and if the practitioner should not take pains on the following day to ascertain the precise particulars of his case, the very dangerous state of his patient may escape detection for a period of fifteen or twenty additional hours, when it will have become too late to rectify the fatal error. The fact, perhaps, most deserving of notice in the first instance, is the perfect non-subsidence of the fever of labour. That, and its never-failing accompaniment, the total vigilance during the first night after delivery, should determine the practitioner's earliest attention to the state of the head. On examining the temperature of the head, it would be found to range considerably above the natural heat of the living body in its ordinarily healthy state, and probably above that of all other parts of the patient's person. With those symptoms would be connected, an excited state of the heart and arteries, and such a velociousness of the pulse as we rarely have an opportunity of observing in other febrile diseases. The tongue is usually observed to be very free from fur and foulness of every sort. The eye presents a strong expression of cheerfulness and confidence; and if the patient be interrogated as to the state of her feelings, she immediately answers that she is quite well in all possible respects, and often conveys an idea of the great surprise, if not displeasure, which she feels that her medical or other attendants should entertain any doubt of the perfect prosperousness of her recovery. The secretions are interrupted and almost absolutely suppressed during the existence of the malady. The lochial secretion is speedily suspended; and that of the milk is not instituted. The skin, especially that of the face, presents a polished dryness; nor is that of any part of the body suffused by the breathing moisture which naturally accompanies the earlier days of a happy convalescence after delivery. The action of the kindeys is also almost entirely suppressed.

The high-toned actions of the body become associated in the progress of the disease with various extravagancies of the mind; the patient becoming at length the subject of outrageous delirium, which scarcely ever subsides excepting with or on the immediate approach of death. Some three or four hours before the occurrence of the fatal event, the brilliant features of the frenzy are suddenly altered, so as to fall and shrink into an expression of a most commiserable fatuity, accompanied by a pulse tremulous, feeble, and innumerably frequent. This disease may often be successfully treated by ample bleeding at its commencement, and followed up by the other measures usually considered proper for the subduction of highly acute diseases; by the use of cooling applications to the

whole of the naked scalp; and by the exhibition of full doses of calomel and jalap. The author wishes to lay great stress upon the reduction of the temperature of the head by the operation of certain cooling measures which have already been repeatedly and strongly recommended for the subduction of violent cephalic symptoms, in the course of the present undertaking.

Of Puerperal Insanity.—Allied to puerperal phrenitis, is the disease which has sometimes been called mania lactea, or puerperal insanity. Both these designations of the malady are equally objectionable, as neither can be considered applicable in all cases. For the sort of insanity which most frequently takes place in the puerperal state is occasionally known to occur at periods of considerable distance subsequently to it; and when on the contrary it is observed to supervene within the period of a single month, and sometimes of one or two days after delivery, it would appear very doubtful how far it should be attributed to any disturbance or derangement of the function of lactation. The actual explosion of this form of aberration of mind is often ascribable to the influence of causes merely accidental concurring with a strong predisposition of the subject to morbid impressions during the puerperal state. It seems almost always to supervene during a languid state of the general health, accompanied by a slightly-excited condition of the heart and arteries. The patient for the most part, complains of being indisposed, or of not being perfectly well; without however, sustaining any ailment which she could embody into a substantial ground of complaint. She will be found to have recently slept imperfectly, and in insufficient quantity to refresh her exhausted powers. This state of imperfect sleep gradually advances to that of more or less perfect vigilance; until at length it is ascertained that the function has become totally suspended. In the mean time her spirits are observed to be unusually depressed, and her temper unusually peevish and irritable. In the progress of the malady some supposed cause of discontent is magnified into a source of much unhappiness, or of continuous vexation and of querulous loquaciousness. After the total cessation of the power of sleeping, a partial alienation of the reasoning faculty takes place, and gradually extends its influence from the primary perversion to other subjects, until at length the whole chain of the power of association becomes disrupted. The pulse is found usually more frequent than natural, but generally nevertheless of a subdued character with respect to strength. It is often represented as a weak pulse; although there is about it a quickness and an obstinacy which make it not easily compressible. Its character upon the whole is such as unfortunately too frequently leads to the adoption of inert practice. With this state of the circulation we frequently find associated a temperature of the body scarcely raised above that of blood-heat during health. But to this condition we should mention an exception either of all or of some part of the head, whilst however this partial temperature is scarcely ever raised more than one or two degrees above that of other parts

of the body. During the earlier days, or possibly for the first week or two of the disease, the alienation is confined to the original object of morbid contemplation; but as the malady proceeds and becomes established, there is not unfrequently an entire abolition, or at least a very extensive diminution, of power of all the attributes of the understanding. In other words, the patient becomes perfectly insane.

Of the Treatment of Puerperal Insanity.—In the greater number of cases of mental alienation during the puerperal state, which have occurred within the experience of the author, the disorder appeared identified with, if not actually depending upon, an obscure departure from a perfectly healthy state of the circulation in the vessels of the brain and its meninges. This was proved by an inconsiderable acceleration of the pulse, as has been already stated by an observable increment of power in the pulsation of the temporal arteries, and by the fact which constitutes probably the principal occasional cause of the disease, namely, that of obstinate vigilance, which is, at all events, an unfailing accompaniment of it. If this view of the circumstances involving the invasion of puerperal insanity be correct, it would naturally suggest the means which experience has proved to be best calculated to obtain an early cure of it. These consist in two or three principal measures, namely, 1st, in tolerably ample bleeding, both general and topical; 2nd, in an adequate subduction of the increased temperature of the head; and 3rdly, in the exhibition of an active emetic, and afterwards of a purgative, consisting of calomel and jalap, in the dose of five grains of the one, and a scruple of the other. Bleeding by the arm might, perhaps, be omitted in favour of a more ample abstraction of blood, from the temporal arteries, or from the prominent surfaces immediately behind the ears, by cupping. Those measures having all been crowded into a short space of time, the patient should then, as speedily as possible, be placed under the influence of full and repeated doses of opium. The author begs to observe, that this brief account of his own practice embodies, in point of fact, a system of treatment of puerperal insanity which has very rarely failed to restore the patient to perfect possession of her reason in the course of a very few days. It however should be considered calculated to produce the effect here represented, only when adopted very speedily subsequently to the commencement of the malady. After the disorder shall have become established, it of course must soon be expected to assume the chronic character, and to become subject to the laws of chronic diseases. The bleeding, which should not be very sparing, nor on the other hand very profuse, is especially suggested as a measure of preparation and security for the exhibition of opium upon a large scale. Until the important object of inducing sleep shall have been attained, the case will furnish no ground for any substantial hope of an early recovery. After the bleeding shall have been premised, and the patient's head shall have been shaved and laid upon a pillow of iced water, prepared as the reader will find described in a foregoing page of this work, a dose

of calomel and opium, consisting of ten grains of the one and two or three of the other, should be exhibited without loss of time; after which, draughts consisting of camphor mixture, liquor ammoniæ acetatis, and mint or cinnamon water, of about half an ounce each, together with sixty drops, or eighty, or a hundred, according to the supposed demands of the case, of the tincture or of Battley's liquor of opium, should be successively administered every two, three, or four hours, according to the urgency of the symptoms. If after the lapse of a few hours, the patient should fortunately sleep under this treatment, the circumstance should be made available for urging the same course of practice with great decision and regularity. After first waking from even a disturbed sleep, thus forcibly induced, another measure of the opiate should be exhibited, without too nice a reference to the hour when it had been last administered. The author has, in very many cases of the disorder, exhibited this potent and admirably-efficient medicine, in quantities of from four to six drachms of the liquor in divided portions in the course of six or eight hours, with the best effects; and those effects have been so prompt and decisive as to be attended with scarcely any one exception of failure. Whilst this practice is placed under the care of a competent person to carry its application into full operation, another attendant, similarly endowed with ability and with a commanding influence over the patient, should be intrusted with the duty of regulating the temperature of the head, and with that of administering the other medicines prescribed. The ordinary attendants judiciously appointed, should be instructed to be discreet and firm, but at the same time mild and soothing, in the moral management of their charge. If the patient should be of a temper to make attempts at resistance, and to refuse compliance with the reasonable wishes of her medical attendant, a firm determination on the part of her husband, or other most influential friend or friends to see those wishes complied with, must be exerted in such a way as not to fail to impress her mind with a conviction of the absolute expediency of submission. Lest the reader might not be able easily to refer to certain statements which the author has more than once suggested, on the value of calomel and jalap as a purgative remedy in cephalic diseases, he would beg here to repeat, that this combination of two excellent aperients has often appeared to him to produce incomparably better effects than any other medicines or combinations of medicines of the same class, when prescribed for such affections. If the precious opportunity of the first two or three days of the disease be allowed to pass without being made available for the adoption of the above remedial measures, the melancholy disorder will most probably extend its influence beyond the limits within which an early restoration to health could be reasonably expected. In that event, the case must be surrendered to those arrangements which worldly circumstances, and the influence of the kindest family affections, may best suggest for the eventual restoration of the patient, now become the subject of a chronic malady, to the happy state of a full re-possession of a sound mind in a sound body.

Of Phlegmasia Dolens, or the Swelled Leg of the Puerperal State. —The proximate cause of this malady was not known till the year 1817, when it was for the first time recognised in the practice of the obstetric school then under the superintendence of the author. Mrs. Caroline Dunn, aged twenty-one, a poor woman, under the care of Mr. Hunt, one of the pupils of the school just named, and now a resident practitioner at Bath, sustained a profuse discharge of blood both before and after the birth of the child. On the following day she became the subject of febrile symptoms, as described in the history of the case on its first publication. The patient died. It had been for some years an object with the author to arrive at an accurate knowledge of the pathology, or, in other words, of the proximate cause of phlegmasia dolens, and he was therefore induced to solicit the services of some competent anatomist to assist him in the inspection of the parts. Mr. Lawrence, surgeon to St. Bartholomew's Hospital, kindly accepted the charge, and on the day after but one sent the author a letter in which he gave an ample description of what he saw. Of that letter the following is an extract. The whole of the manuscript is in existence, and may be perused by any professional gentleman who may be interested in such inquiries.

"Appearances observed on examining the body of Caroline Dunn, on the 6th of March 1817, in the presence of Dr. Davis."

"The left lower extremity presented an uniform œdematous enlargement, without any external discoloration, from the hip to the foot. This was found, on further examination, to proceed from the ordinary anasarcous effusion into the cellular substance. The inguinal glands were a little enlarged, as they usually are in a dropsical limb, but pale-coloured, and free from the slightest sign of inflammation. The femoral vein, from the ham upwards, the external iliac and the common iliac veins, as far as the junction of the latter, with the corresponding trunk of the right side, were distended and firmly plugged with what appeared externally a coagulum of blood. The femoral portion of the vein, slightly thickened in its coats, and of a deep-red colour, was filled with a firm bloody coagulum adhering to the sides of the tube, so that it could not be drawn out. As the red colour of the vein might have been caused by the red clot every where in close contact with it, it cannot be deemed a proof of inflammation. The trunk of the profunda was distended in the same way as that of the femoral vein; but the saphena and its branches were empty and healthy. The substance filling the external iliac and common iliac portions of the vein was like the laminated coagulum of an aneurismal sac, at least with a very slight mixture of red particles; the tube was completely obstructed by this matter, more intimately connected to its surface than in the femoral vein; adhering indeed as firmly as the coagulum does to any part of an old aneurismal sac; but in its centre there was a cavity containing about a teaspoonful of a thick fluid of the consistence of pus, of a light-brownish tint and pultaceous appearance. The uterus, which had contracted to the usual degree at such a

distance of time from the delivery, its appendages and bloodvessels, and the vagina, were in a perfectly natural state. There was not the least appearance of vascular congestion about the organ, nor the slightest distention of any of its vessels. Its whole substance was, on the contrary, pale, and the vessels everywhere contracted and empty. The state of the abdominal cavity and its contents was perfectly natural. That the substance occupying the upper part of the venous trunk, and the fluid in its central cavity, had been deposited there during life, from inflammation of the vessel, does not admit of doubt. I am also decidedly of opinion, in consequence of its firmness and close adhesion to the vein, that the red coagulum in the femoral vein was the result of a similar affection extending along the tube; and that the passage of the blood through it, in the whole tract submitted to examination, must have been completely obstructed before death.

"College of Physicians. Wm. Lawrence."

The above case, after exciting considerable interest among the author's pupils and their immediate friends at the time of its occurrence, was made the subject of a public debate or conversation at the Bartholomew Society in the spring of the same year.

This fact was stated in a paper on the subject published in the 12th volume of the Medico-Chirurgical Transactions, page 419, on the authority of Mr. Hunt and other medical students of the period in question, and the author has no doubt that it is a matter even now of perfectly distinct recollection with many gentlemen who were then and may be still in the habit of paying occasional visits to that justly celebrated hospital. In the essay just referred to, the author appended, for the illustration of his theory of the proximate cause of phlegmasia dolens, three other cases which had occurred within the period intermediate between the date of Mr. Lawrence's letter, and that of the essay just referred to, for the purpose of sustaining the same pathology of the disease. Of these, one was that of a very young married lady, who died suddenly in the midst of high and perfect health, on the 20th of September 1819, in the sixth week after her second puerperal confinement. She had been the subject, during the earlier weeks after her delivery, of phlegmasia dolens. On examination of the body after death, the external iliac vein, including a portion of its corresponding femoral vein, was found strongly attached, by adhesions of its cellular coat, to the parts forming its natural bed. Its parietes still retained a morbid thickness, and its internal tunic was studded in several places with deposits of adherent lymph. The tube of the vessel was left manifestly pervious, although it had suffered a diminution of capacity amounting to about one half of its natural diameter. The inguinal glands were not diseased. The dissection was performed by the late Mr. Taunton of Hatton Garden, in the presence of Messrs. John Taunton junior, and Mr. George Anderson of Hatton Garden. The preparation in illustration of the facts now stated, is to be seen in the Museum of Ana-

tomy of the University of London. Whilst preparing the paper already referred to, soon afterwards published in the Medico-Chirurgical Transactions, the author was honoured by a communication from his friend Mr. Oldknow of Nottingham, in which was given the following case of phlegmasia dolens, which had occurred about two years previously in that gentleman's practice.

"Jane Elliott was delivered in September 1820, after an easy and natural labour. On the 20th day after the delivery she was seized with a violent purging, for which astringents were given with success; but the pulse continued quick, and she had considerable fever. On the 30th day the fever returned, and the left lower extremity became swollen and painful, with considerable increase of fever. She died on the 34th day."

"Dissection.—On examining the swollen limb on the day after her death, I found the femoral vein, one-third down the thigh, and all the iliac veins much enlarged, and containing adherent layers of coagulated blood, similar to that found in aneurismal sacs, together with a sort of grumous fluid of a brown colour, more or less mixed with air, and almost obliterating the venous canals. The same appearances, but in a much less degree, extended along the cava as far as the entrance of the renal veins. The coats of the veins were highly inflamed, and intimately attached to the surrounding parts. The absorbent vessels and glands were slightly enlarged as high as the lumbar regions, but not otherwise affected. The uterus had regained nearly its natural size.—H. Oldknow."

Mrs. L., a lady of a delicate constitution and of a very irritable habit was delivered of her fifth child in July 1821. She had been subject to feverish affections in several of her former confinements. On this occasion she recovered well till the seventh day after her delivery, when she was taken out of bed and placed on a sofa exposed to a current of cold air. In this situation she was seized with a violent rigor, which was speedily succeeded by a pain in the left side of the chest, which increased rapidly in intensity, but which, in consequence of bleeding and the application of a blister, was in a great measure subdued, an advantage which, however, was not accompanied by any material reduction of the attendant fever. Concurrently with this affection of the chest, the usual symptoms of phlegmasia dolens manifested themselves. The patient died on the 25th day after her delivery. Dissection. The pleura costalis of the left thoracic cavity was found slightly inflamed, and lined in two or three places with a delicate tunic of lymph; there was also an effusion of about six ounces of a transparent fluid into the cavity itself. The lung of the same side was of a dark red hue. The heart and pericardium presented no appearances of disease. The right cavity of the chest and its contents were also healthy. All the surfaces and viscera of the abdomen, moreover, were apparently in a perfectly sound state. The left lower extremity, from the hip to the toe, was considerably, but not greatly, enlarged; and there was an evident fulness of the labium pudendi of the same side. Both iliac veins

were unusually turgid with blood; but presenting no other external manifestation of disease. They were entirely free from attachments to contiguous parts. The inguinal glands were certainly not diseased, nor even visibly enlarged. On making a careful incision into the left external iliac, it was found to contain a coagulum of blood of firm consistence; but not at that part adherent to the internal surface of the vein. Upon examining, however, the common iliac portion of the vessel, adhesion of the same column of coagulum had obviously taken place. This fact may be now easily recognised on inspecting the preparation of the part, which may be seen among other pathological illustrations of the same subject, in the medical museum of the University. The left internal iliac was greatly inflamed; and its diameter was so much contracted by the morbid thickening of its parietes that it was rendered almost impervious. The right iliac vein, including both its common and external portions, was distended by a similar coagulum; or rather, the same column of coagulum was prolonged over the angle of their common junction with the vena cava from one iliac to the other.

The above four cases furnished the materials and formed the basis of the author's theory of the proximate cause of phlegmasia dolens, as it was afterwards published in his paper on the subject in 1823. The doctrine was propounded in his obstetric school from the date of the first and important case of Mrs. Caroline Dunn. From that period till the year 1835 inclusive, he has never failed to state his opinion, nor to exhibit the preparations illustrative of the facts on which he founded it, to a pretty numerous auditory of students, at least twice every year. The doctrine thus unceasingly and publicly espoused by him on so many different occasions, was as well known in all the medical schools of London in the years 1818, 1819, and 1820, as it has since been to all well-informed pathologists in Europe. The author believes, at the present moment, that the truth of it was completely established at least for six years, before it was presented for admission into the Medico-Chirurgical Society's Transactions; and such had been the state of knowledge of the profession in London on the subject of phlegmasia dolens for not less than eleven years, when Dr. Robert Lee published his first contribution to the pathology of the same disease in the 15th volume of the same Transactions, in which that gentleman chose to assign to the author a secondary and subordinate station amongst modern contributors towards the elucidation of the subject; giving M. Bouillaud, by something more than implication, the merit of being the first to identify the inflammation and suppuration of the iliac veins with the proximate cause of the swelled leg of the puerperal state; whilst, at the same time, he must have known, and did know, if he had ever read Mr. Lawrence's letter, that the author had irreversibly established his title to it in the year 1817. It would appear quite unnecessary, at present, to make a single observation upon another paper of Dr. Robert Lee on the same subject.

The treatment of phlegmasia dolens which the author proposed in the above paper, has for some time become the established practice for its sub-

duction amongst the profession in this country. Reasons were given in that essay why general bleeding should be considered as contra-indicated, of which it is now necessary only to notice very briefly the most important; namely, that a great part of the blood of the entire system during an advanced stage of phlegmasia dolens is locked up in the swelled leg, and therefore in a great measure rendered unavailable to the general purposes of the circulation.

This fact makes it necessary that all sanguineous depletion must be made from the neighbourhood of the primarily inflamed tissue; and experience proves that the proper mode of abstracting the blood topically for the particular object in view is by the application of an adequate number of leeches to the groin, inside of the thigh, or other surfaces of the iliac region and limb affected, as the particular case may indicate. The leeches should be applied in the number of from twenty to thirty, according to the degree of pain, the amount of the general phlogosis, and the stage of the disease. When this indication shall have been sufficiently fulfilled, and the surfaces so treated shall have become dry after the bleeding, some principal tracts of the parts in question should be extensively covered with blisters, which will scarcely ever fail to promote most perceptibly the general intention of the treatment. In the mean time it will of course be required of the practitioner to secure for all the functions implicated the most healthful state to be obtained by the exhibition of suitable medicinal agents.

END OF THE SECOND DEPARTMENT OF THE WORK.

# THIRD DEPARTMENT

OF

# THE WORK.

# OF THE DISEASES OF CHILDREN.

In the present section of our undertaking the author has to bring under consideration the phenomena of disease as they are exhibited in infancy and childhood. It is a popular but not altogether a correct notion, that all the affections of infants and young children are but modified forms of diseases incident to maturer stages of life. In certain cases we observe, no doubt, striking analogies amongst diseases of all periods of life; as we may especially observe in the divers forms of inflammatory action, and also in different kinds of organic changes and degenerations. Where much of the structure of the frame, and also a great proportion of its functional processes, are so different in infants from those of adult age, it cannot be reasonably maintained that there are no peculiarities incident to their diseases. So far indeed is this from being true, that some small proportion of the present division of our work will be occupied by descriptions and examinations of parts and functions especially appertaining to early periods of life, with a view to a more practical examination of their several diseases and derangements. Such anatomical and physiological sketches as here contemplated, are thus brought forward from necessity as well as for the purpose of maintaining a certain consistency of plan throughout the work; for it is as important to possess an acquaintance with the structure and functions of the organs involved in infantile diseases, when investigating their nature and devising plans for their treatment, as it is for the successful conduct of similar inquiries into the nature of adult maladies.

The diseases of infants will be found to comprise two great classes; viz. 1st, that of organic changes in the constituent tissues of the body; and, 2ndly, that of disturbances of the healthy train of actions carried on by the various systems of which it is composed. But if all the diseases to which children are liable were to be brought under review, the author would expose himself to the imputation of trenching too much on the field of general pathology for his present purpose, and of extending his labours beyond the legitimate boundaries of his subject. He therefore deems it expedient to confine his attention simply to those diseases which appear principally during the earliest years of human

existence; and to consider them severally, either as they manifest themselves at birth or are induced by the casualties of parturition; and as they are developed during the evolution of the several phenomena of incipient infantile life, or at most of those of a very few years of our earliest infancy. The arrangement however of the subjects in this part of the work being in a great measure founded on the nature of the tissues principally or exclusively affected, making allowance for the greater variety of the organs the diseases of which will be to be discussed, a close resemblance in method will thus be kept up between the treatment of its matter and that of our preceding divisions. The author will distribute his notices of the diseases of children under the following heads:—

1. Of doubtful states of vitality and of anomalous formations and congenital diseases presented at birth.
2. Of the diseases of the digestive organs, including especially those of the mucous membranes.
3. Of the circulation of the blood; and some of its principal derangements.
4. Of the functions and disorders of the respiratory organs.
5. Of some of the more important diseases of the brain and nervous system.
6. Of the more popular cutaneous affections of infancy.

### OF OPPRESSED OR DOUBTFUL STATES OF VITALITY OF CHILDREN AT THE BIRTH.

It sometimes happens that children are born in so feeble a state as not to be competent to exhibit the usual manifestations of life. Of these births we have to notice two very distinct varieties, which are nosologically designated correspondingly with their supposed causes. Children so born are said to be either in a state of asphyxia or apoplexy.

The term ASPHYXIA is here to be used simply to signify the absence of the usual signs of life. In this case the child is pale, apparently exsanguined, flaccid, immobile, and, to all appearance, perfectly without sensation. This state of things may be a consequence of detachment of a portion of the placenta either during the labour, or immediately after the expulsion of the child, or of temporary suspension of the circulation of the umbilical cord from pressure of the practitioner's hand, or of any part of the child, or of the parietes of the parturient passage upon it, during its transit through the pelvis; or else from the presence of obstructions occasioned by knots or otherwise, in a funis of inordinate length. The treatment in cases of this kind is to rouse the energies of the fœtal subject, if peradventure any latent sensibility should still exist, by strong frictions, or the application of the hand smartly to the nates or other parts of the child, by immersion of its entire body in hot water, and by a dexterous and speedy inflation of the lungs. The treatment properly prophylactic of asphyxia, consists especially in preventing the cord from sustaining

pressure, and in effecting the delivery as soon as it can be made safe and practicable.

The APOPLEXY of new-born infants must be ascribed to compression of the head during its passage through the pelvis, to the retention of venous blood within the encephalon in consequence of such compression, and eventually to the general suspension of the circulation throughout the fœtal system. In this form of infantile apoplexy the subject presents the same dark-coloured, bloated countenance, suffused eyes, and want of power of motion, as we find exhibited in cases of apoplexy in adults; and these symptoms constitute a sufficiently practical diagnosis between it and the asphyxia just alluded to. On inspection of the body after death under these circumstances, we find the vessels of the head exceedingly turgid, and many of them ruptured, and their contents effused into the ventricles, and into different parts of the brain, forming cysts, containing deposits of coagulated blood. The nature of the cause thus exhibited by dissection furnishes obvious matter for a highly UNFAVOURABLE prognonis in the worst forms of cases of this description. If also the umbilical cord should present the character of a BLUISH-YELLOW TINT, indicative of stagnation of the circulation for a considerable length of time, the practitioner might safely consider himself absolved from the obligation of instituting any process of resuscitation, as in such a case he could by no possibility anticipate any useful result from it. If, on the other hand, the complexion of the umbilical cord approximate to that of the living condition of the funis, resuscitation should by all means be attempted, even though the fact of the vitality be rendered not a little doubtful by a total absence of pulsation. In accomplishing this object, the first thing to be done should be to allow about two ounces of blood, AT MOST, to escape from the umbilical end of the bisected cord. This moderate, but safe, amount of relief being given to the overweighted circulation of the fœtus, its entire body, up to the chin, should be immersed in hot water, of which the temperature should be the highest that could be borne by the practitioner's own hand. To this should be added strong friction of the extremities, both superior and inferior, in the direction of the superficial veins towards the heart. The function of breathing under these circumstances might require an artificial commencement by inflation of the lungs. Such inflation ought therefore to be instituted as soon as possible, and to be prolonged with great patience, until there should remain no hope of a successful issue.

OF GREAT FEEBLENESS OF NEW-BORN INFANTS.—The causes of the asthenia here supposed, are resolvable either into defective supply of nutriment in the womb of the mother, or to defective capacity in the assimilating functions of the fœtus. Great paleness of the fœtus, with obvious marasmus of the different parts of its body, ought not therefore to be considered as an absolute evidence of its incapacity to support life at the moment of its entering upon its new mode of sustaining it. Simple syncope should be considered as a temporary absence

of the function of respiration, and should therefore be relieved by artificial inflation of the lungs. Premature birth would always be a natural cause of the feebleness here treated of.

Of Anomalous Appearances and Formations at Birth.—Of the deviations from the ordinary forms of parts presented immediately after birth, some are the effects of pressure, or of other accidents sustained by the fœtus during its transit through the parturient passage; and others the result of imperfect or preternatural development of parts before birth. The latter are usually called congenital diseases of children. Those imputable to the action of birth are more immediately the objects of professional treatment.

Of certain External Effects and Injuries attributable to Parturition.—In some cases of apoplexy of infants at the birth, the fœtal head is found greatly elongated from distention and protrusion of scalp, in consequence of retention of venous blood within its substance. This elongation from the identity of its situation with the locality of the small fontanelle or mole of the head, as it was formerly called, is, in the older books of midwifery, designated the mole-shot head. Cases have moreover been recorded of intumescence of parts of the head at birth, from the presence of a certain quantity of a viscid fluid beneath the scalp and between the scalp and pericranium. Incisions have occasionally been made into these morbid deposits; but such a treatment is not required, inasmuch as the fluid in question will never fail to be taken up by the absorbents in the course of five or six weeks subsequently to the child's birth. Again, the presenting part of the head, by reason of its long exposure to pressure during labour, has occasionally, but very rarely, been known to sustain so much compression as to terminate in suppuration. Such a case must be treated on common surgical principles.

Of Depression of one or both of the Parietal Bones.—This occurs in difficult labours where the relative proportions of the head of the fœtus and the parturient passage are not exactly adjusted, and is that form to which the name of horse-shoe head has been given. The treatment recommended for it is entirely mechanical. Some have endeavoured to squeeze out the depressed bones as one would squeeze an indentation out of a tin canister. For the same purpose, traction has been employed by means of adhesive plaster applied firmly over the depressed portions; as cupping-glasses have also been applied with the same intention. Generally no mechanical assistance is required.

Serious injuries are sometimes received from compression of the parietes of the pelvis upon the child in cases of great confinement of the parturient passage, producing hideous distortions and discolorations of different parts of the fœtus. A French writer notices a case of one of the servants of a nobleman of his own country, whose child suffered so exceedingly from a case

of protracted labour, that, when born, it presented the aspect, and the complexion, and the peculiarity of features, of a young African, to the no great mortification of her husband and friends. The mother was required to explain so remarkable an occurrence; when she acknowledged that she had entertained some kindly feelings towards the black footman of the Duke of Guise, her master. The circulation of the child having recovered its natural vigour, the ordinary European complexion returned. The discoloration had been exclusively the effect of stagnation of the fœtal blood within the gorged veins of the face.

The undexterous use of instruments, or of the hand, has been productive occasionally of fractures, dislocations, and other injuries. But misfortunes of this description are more frequently imputable to the abuse, than to the proper use, of any obstetric powers whatever.

Of certain local Diseases of Children occurring soon after Birth, often from careless management.—It is usual in tying the umbilical cord to leave a portion of about three inches of it included between the ligature and the navel, in order that a second ligature or even third may be applied to it if necessary. This portion of the cord should be included between thick folds of old linen; and if such a precaution be omitted, its putrefaction may irritate the immediately contiguous part of the abdomen into a state of erysipelatous inflammation. After the cord shall have dropped off, the part continues raw for about three days. In common cases this may be healed by the application of calamine powder; but sometimes, either from carelessness or from peculiarity of constitution, the part does not heal kindly, but continues to discharge matter for several days; or it may eventually become erysipelatous. Hence the abdomen becomes intensely inflamed, and the child for the most part is carried off in convulsions. When gangrene and loss of substance supervene, it will sometimes be found useful to cover the part with a thickish poultice, reduced to a softer consistence with generous port-wine. The constitutional treatment should consist in the exhibition of calomel, in doses of two or three grains daily, to act as an aperient and a cholagogue, and of moderate quantities of quinine to sustain the strength.

Of Hæmorrhage from the Umbilical Cord.—The escape of the blood in this case is always from the vein. Hence the unsuitableness of attempting its subduction by much compression. On our failure therefore to arrest the homorrhage by means of our ordinary astringents, we should resort to the actual cautery, by means of a common stocking-wire made red-hot. The eschar thus produced would be of no consequence, and it might be speedily expected to stay the hæmorrhage.

Of Purulent Inflammation of the Eyes of Infants speedily after Birth.—Inflammation of an infant's eyes is a very common consequence of want

of proper management during the first three or four days subsequently to birth. One of the earlier faults of the nursery, there can be doubt, is to bathe the child's eyes with strong solution of soap in water; and another is, to expose its eyes to the action of cold streams of air and too intense light soon after its birth. But there is reason to believe, that the inflammations under consideration are more frequently derived from exposure of the eyes to blenorrheal impurities during the transit of the child through the vaginal passage. The treatment which has been found almost always successful during the incipient stage of this inflammation, has been the application of a small leech to the lower lid of the affected eye, and to the precise locality of the infra-orbitary foramen. Added to that, it may also be useful to exhibit, at the very commencement of the inflammation, five or six grains of ipecacuanha powder as an emetic. A few grains of calomel given as an aperient, will then in most cases suffice to complete the cure. Should much inflammation of the conjunctiva be still left, the action of absorption may be accelerated by dropping into the affected eye one drop of a solution of the nitrate of silver in distilled water, in the proportion of two grains to an ounce, two or three times a day. The reader should be apprised, if this early treatment be neglected, and the inflammation be allowed to be exasperated into advanced purulency, that the tunics of the eye may actually suffer destruction, and the organ be permanently deprived of its vision.

Of Congenital Diseases and Malformations of New-born Infants. And first, of Occlusion or Imperforate States of the Natural Passages.—Examples of such imperforate states are those of the anus and the rectum, of the vulva and vagina, and of the urethra in both sexes. To these may be added, although occurring but very rarely, congenital obstructions of the larynx and pharynx. The rectum is thus affected by a state of imperforation in three different degrees or circumstances; namely, first, when the passage is only occluded at its termination by a film of membrane so thin and transparent as to shadow the meconium through. In that case, the treatment will be found very simple, consisting exclusively in making a crucial incision across it. In other cases, we meet with a firm cohesion of the parietes of the tube for an extension of one or more inches. If the tube extend to within half an inch of the verge of the anus, an artificial passage might possibly by great delicacy of dissection, be artificially opened, and with great assiduity and management be kept open for permanent use. The third variety of an imperforate rectum is, when the whole or greater part of that gut is wanting, or when the remainder communicates either with the bladder or with any conformation of a cul de sac in its neighbourhood. This case, if at all to be relieved, could only be remedied by the substitution of an artificial anus. Imperforate states of the vulva and vagina need not be made the subjects of treatment immediately after birth, provided the urethra be not also implicated in a similar predicament.

If, on the other hand, the urethra in either sex be imperforate at birth, it should be most carefully examined as soon as discovered or suspected; it being obvious, in such a case, that an operation would be required to be performed before the lapse of many hours. The more common variety of an imperforate state of the urethra consists in the stretching of a very thin membrane across the external orifice of the tube, corresponding with the analogously attenuated membrane already mentioned, as closing up the verge of the anus. It is easily perforated by means of the point of a lancet or probe, which ordinarily is all that is required to furnish a free outlet to the stream of urine from the bladder. Obstructions occupied by other localities of the urethra will involve the results of the case in much greater difficulties and dangers, and require the assistance of some of the more delicate services of the art of surgery.

Of Preternatural Adhesions of parts to contiguous surfaces.—Of such cohesions, are those between the upper and lower eyelids and the opposite surfaces of the nostrils, between the tongue and the lower and anterior part of the mouth, between the frænum and the whole of the tongue even to the tip, and intermediately between fingers, toes, etc. The cohesion of the whole length of the tongue as far as its tip with the flooring of the mouth, is not a very unfrequent inconvenience; it being commonly known by the designation of a child being tongue-tied. It is most easily rectified by dividing the frænum to some distance from its connection with the tongue. This separation may be very safely effected to the full extent of its natural connection with the body of the tongue, provided the practitioner take care not to wound the renal arteries. In the case of a broad-belted adhesion of the body of the tongue to the contiguous surfaces below it, the remedy will be less easy and less certain. There is generally a great disposition for recontraction of congenital adhesions of surfaces subsequently to artificial separations.

Cohesions of fingers and toes by intermediate tissue has given the designation to some people of web-footed and web-handed persons. The proximate fingers or toes have sometimes served to agglutinate those parts, without however any intermediate web. In those affections of the toes simply, little necessity can exist, in this country where shoes or sandals are used, for any operative treatment; whereas, even in web-handed cases, it may not always be necessary.

Of Cohesion of the Penis to the Scrotum.—This malformation is sometimes accompanied by other imperfections or confusions of the parts. If the cohesion be very extensive, it will be difficultly separated to a sufficient extent to give full freedom to the actions of the penis. But, the success of the treatment will greatly no doubt depend upon the perseverance of the patient, and his willingness to submit to divers repetitions and modifications of operations as the necessities of the case might require.

Of Congenital Hernial Protrusions.—The designation of hernia

CEREBRI has occasionally been applied to protrusions of brain through irregular spaces or apertures in the skull, by reason of defect of bone. The object of the treatment here, if attainable, is to confine the brain within its natural boundary, the skull, without exposing it to the risk of dangerous compression. The practitioner's success will much depend upon his assiduity, and on the delicacy of his mechanical management. Some of these cases have done well for a year or two; but in others, the process of their ossification progressing too rapidly as well as irregularly, they have ended fatally at an earlier period, by the child being carried off suddenly in convulsions.

OF INTESTINAL HERNIA.—Children have now and then been born without the whole of the abdomen being covered in by its ordinary complement of integument; when portions of intestines or other viscera have been found protruding through the openings. Art can do little to increase the rapidity of the natural growth of the parts thus deficient. Nature has sometimes been found to exert herself for the supply of such deficiencies with great energy; it being then the duty of the practitioner to contribute to her assistance, whatever dexterousness of mechanical support his art may be able to extend to her. The variety of hernial protrusions, which is most apt to present itself congenitally, is omphalocele. This form of intestinal protrusion is an inconvenience principally from its liability to extension, on account of the crying of the child during early infancy. Its treatment is chiefly to be conducted on mechanical principles. Equable pressure, and not too much, with occasional reductions of the protruded gut from time to time, is all that need be resorted to to secure its eventual well-doing. The better mechanic in this case, will prove the better surgeon. Trusses should be avoided. INGUINAL hernia when congenital is very troublesome, the gut in such cases being in close approximation to the testicle. The tumour increases whenever the child cries. In these cases also, we never allow any truss to be applied during the first year. After the second or third year, when the parts become firmer and less irritable, a truss may be had recourse to with great advantage.

OF CLEFTS, OR SOLUTIONS OF CONTINUITY IN NATURALLY-CONTINUOUS TISSUES.—Of these cases, the principal is the hare-lip, of which there are three varieties, namely, 1. One cleft in the upper lip. 2. Two clefts in the upper lip. 3. Such division or divisions of the lip accompanied by a fissure of the palate. The time of operating in these several forms of cases has often been disputed. This subject having only a few years ago occupied the attention of a consummate practical surgeon now resident in the metropolis, the author has great confidence in the opinion of that gentleman for a decision of this point. "Congenital deficiency of the lip uniformly occurs in the upper one. It is either simple or complicated. Frequently there is only a fissure on one side of the mesial line. This may be combined, although it occurs but seldom with a division of the soft or hard palate; or there may be a fissure on each side of the mesial line with an intervening flap. The flap may be either of the same

length as the rest of the lip, or more or less shortened; and it may be either free, or attached to part of the alveolar process. In such cases as the latter, the central alveolar processes and teeth often project considerably beyond the arch of the hard palate, greatly increasing the deformity. The deficiency of the lip produces a disgusting and horrible deformity of the countenance; and when there is division of the palate, the voice is indistinct and almost unintelligible.

The simple fissure of the lip, without deficiency of palate, is easily remediable by operation. The fissure, as already mentioned, is to one side of the mesial line, and its edges, covered by a continuation of the prolabium, are rounded off at their lower part. The operation is not attended with much loss of blood, nor is it very painful. It can be performed at any period of life; but in young children it is not advisable to have recourse to severe operations on these or other parts. Children bear the loss of blood badly, and their nervous system is apt to be shaken. Convulsions are induced and often terminate fatally. The most proper age for removing deformity by operation, is from that of two years and a half to four years. There is then no danger incurred, and during the growth of the individual, the parts recover more and more their natural and healthy appearance." After giving a neat description of his method of operating for single hare lip, the writer proceeds to observe, that, " Fissures more or less extensive of the hard palate generally attend double hare-lip. The position and size of the intermediate portion of the lip, and of the superior maxillary bone, are various; and the operator, in forming his plan of procedure, must be guided by the state of the parts." Here, again, we have a description of the requisite operations to be resorted to in the case supposed. " When the hard palate is deficient, the patient is subjected to great inconvenience from food escaping into the cavities of the nose, and, in later life, a horrid wretchedness of articulation occurs. It may be readily understood that surgery can be of little avail here. Recourse must be had to mechanical contrivances." . . . . . " Fissure of the soft palate is usually accompanied by separation of the bones from which it is suspended. The size of the fissure is various, and depends very much upon the state of the hard parts. In some cases, the extent of separation is great; in others, the edges are readily approximated by making the patient throw the muscles into action. The latter class of subjects admit of operation with a view to a permanent union of the edges of the fissure. But it is a proceeding which, to ensure success, requires not only great steadiness, coolness, and dexterity on the part of the operator, but the utmost courage, submission, and self-denial on the part of the patient. These qualifications can scarcely be expected in patients under the age of thirteen or fourteen; and, by consequence, the operation should not be attempted till after that time of life."—Elements of Surgery, by Robt. Liston, Esq., Pt. 1, p. 187. Lond. 1831.

Of Supernumerary and Substitute Outlets from the Rectum and Bladder.—These have usually been distressing examples of malformations,

admitting of little or no advantageous treatment. The art of surgery has, however, occasionally protracted life for many years under such circumstances.

Of Distortion from Irregularities of Relative Positions of Parts.—Of such distortions, the most frequent variety is that of the lower extremities called club-feet. The toes in some cases are directed outwards, and in others inwards. Cases of the latter variety are in technical language called Vari, and those of the former Valgi. The most frequent specimen is incomparably that of the Vari; whereas the distortions having the toes turning outwards are the most easily cured. But both forms are curable, or at least capable of very great relief by skilful and persevering management. Failure, however, is often incurred by premature exertions to effect the cure. It is better not to bind the child's foot, nor in any way to confine the extremity, during the first twelve months after birth, nor until the limb shall have attained a degree of firmness and robustness sufficient to enable it to sustain bandages with impunity to the progressive currency of the blood and other fluids circulating within its tissues. During the first twelve months, the object of the practitioner will be attained by the child's nurse simply undertaking to keep the affected foot firmly within one of her hands as nearly in its natural position as possible during the greater part of the day and night. This retention of the foot in its natural position relatively to the leg, in the soft and warm hand of the nurse, will go far towards correcting its malposition without essentially interfering with the circulation of its blood. The reader may perhaps recollect often to have seen subjects of club-feet presenting the appearance of spindle-formed calves of their legs. He may take for granted that such reduction of the natural magnitude of the limb is for the most part produced by injudicious bandaging during the earlier weeks and months of life. At the age of twelve or fifteen months the child's limb will have become sufficiently firm to bear with advantage the application of straps, which constitutes the second stage of the treatment. This mode of management will occupy a period of about another twelvemonth, when the child will, in most cases, be competent to run alone. At that period we should begin the use of the jointed machines usually applied to distorted inferior extremities of children. The apparatus should be used only for a very few hours daily for at least six weeks or two months. Subsequently to that time the child will be able to bear its iron supporters altogether during night and day with comparative impunity. Three, four, or even five years altogether may be required of these being worn before the perfect reduction of the foot shall have been effected. The absolute accomplishment of the object by due skill and perseverance is, however, ultimately attainable.

Of Malformations from Excess of Parts.—The more ordinary examples of such malformations are supernumerary fingers and toes. These appearances have not unfrequently presented themselves in particular families, and have been known to reappear in successive generations of the same families for

many years. Of supernumerary digits, whether of the upper or lower extremities, the elementary parts have seldom been perfect as to their compliment of excess, some of the joints or parts of the osseous portions being wanting or imperfect. At other times, portions of bone have been connected with the principal digit by means of links of mere integument.

Children are sometimes born with growths and discolorations on different parts of their surfaces. It is a vulgar notion that these appearances are the results of strong impressions upon the imagination of the mother during pregnancy. There are few educated men who do not now refuse their assent to this opinion.

Arterial nævi materni require early attention, as they often grow rapidly in size, and become the seats of dangerous hæmorrhages. In such cases the parts must be dissected out, after having been properly secured by ligatures. In cases of inconsiderable tumours of this kind, the extension of the mischief may often be arrested by the introduction of a large thread through the substance of the nævus, and perhaps another at right angles with the first. The author has adopted this practice in the treatment of some of the milder specimens of nævi for many years; but he even saw it used, upwards of five-and-thirty years ago, on the recommendation of the late Doctor Cleghorn, of Glasgow.

Congenital defects of parts are by natural condition incurable. All that art can do, can but occasionally, and then very imperfectly, find substitutes.

Of Congenital Dropsical Effusions. Examples. Spina Bifida. Hydrocele and Anasarcous Enlargements of the external Genitals. —Spina Bifida is a tumour which is observed occasionally on every part of the spine ; but most commonly about the last lumbar vertebra. At birth, it is usually small, the skin being scarcely discoloured. But there is always an evident fluctuation and a marked deficiency of spine beneath, the spinal column appearing to start out prominently on either side. The fluid is effused into a cyst, within the spinal sheath. These tumours are originally small, but gradually grow larger; the integuments becoming perceptibly thinner, until at length a slight exudation takes place, which is followed by a bursting of the tumour, and the escape of a yellow fluid. This result is soon followed by convulsions. Other tumours, not of the same nature as the above, are observed about the base of the sacrum, which also generally prove fatal. We may remark, that most tumours of a bloody colour upon the spine, are of a dangerous nature; and that unless when very superficial, they usually terminate fatally.

Males are sometimes seen born with considerable enlargements of the scrotum, from hydrocele. It is a case that requires no particular treatment, inasmuch as the author has never seen an example of the fluid of a congenital hydrocele which was not absorbed in less than two months subsequently to the birth of the child, although he has seen two examples in which the operation was performed unnecessarily by professed surgeons. Absorption

may be promoted by the use of a mild solution of superacetate of lead, or of vitriolated zinc, to the parts affected.

## OF THE DISEASES OF THE DIGESTIVE ORGANS.

Of the Diseases of the Alimentary Canal.—Infants and very young children are exceedingly subject to disordered states of the bowels, from the slightest causes. Among the morbid affections of the chylopoietic organs, we may consider as one of the most important, the action of spontaneous vomiting. This morbid excitement of the stomach may be induced by ungenial impressions of atmospheric temperature applied to the very susceptible external surface of an infant, by its exposure to sudden changes of atmospheric temperature, by over-repletion, by sucking voraciously after fasting, by sucking a nurse in a state of excitement from strong exercise or from passion, by exposure of the lower extremities or of other parts to the action of cold, to that of cold under garments, napkins, etc. interfering with the process of digestion, by the infant being deficiently supplied with its natural food, the mother's milk or that of a substitute, or by sudden changes from good milk to another of inferior quality, and by the use of artificial food of sundry and unsalubrious properties.

If the appearance of the matter thrown up be natural, like softly-curdled milk, and the vomiting amount not to any more than simple regurgitation of the milk swallowed, it is to be imputed to over-repletion, and to be relieved by the exhibition of a light cordial, such as any of the aromatic waters, as of dill, aniseed, or cinnamon: or a little mixture may be exhibited, consisting of half a drachm of the compound aromatic spirit diluted with three or four ounces of distilled water; of which should be given a teaspoonful frequently, until the sickness shall have subsided. If the matter thrown up shall have an unusual appearance, the curd be hard, and its colour yellow, or greenish, we empty the stomach by means of three or four grains of the powder of ipecacuanha, and the bowels by a few grains of calomel; after which the child will soon get well. If the mother's or the nurse's milk be of bad quality, or defective in quantity, a successor should be provided for her, who will be able to perform the duties of lactation more efficiently.

Of Colic of early infancy.—Colic, like the foregoing complaint, is induced by very slight occasional causes. It is strongly indicated by the natural actions of the infant. The child is apt to start suddenly, to writhe and twist its body, to draw up its knees towards the abdomen, and if with these there be occasional discharges of flatus, we may ordinarily be fully assured of the nature of the disease. The treatment of infantile colic is by the exhibition of mild cordials, gentle laxatives, and a warm-bath. If the face be much flushed, attended by heat of the whole surface, we should take away a little

blood by applying a leech to one or both temples, according to the child's age, by way of guarding against ulterior danger, until the nature of the case shall have further developed itself. Our laxatives in those cases should be calcined magnesia, or calomel. Both are mild and safe; but calomel may be depended upon for producing the best action as a cholagogue. Preparations of rhubarb stimulate the bowels of very young children too much. It is moreover possible that stimulating medicines of this class may have the property of exciting the bowels into introsusceptio. Therefore mothers should usually confine themselves in their administration of aperients to infants, to small doses of fine-drawn castor oil, calcined magnesia, calomel, manna, senna, and neutral salts. Opiates should be given to infants at the breast with great caution, inasmuch as they are especially calculated to retard and greatly to derange the action of the liver.

Of Intussusceptio.—Intussusceptio is one of the most dangerous diseases to which children are liable. Its attack is sudden, and it generally goes on rapidly to a fatal termination; which sometimes occurs within twenty-four hours, but more commonly within two or three days after the commencement of the malady. It consists in the passing of one portion of the intestine into another immediately continuous. When the upper portion passes into the lower, it is called the progressive variety of intussusceptio; but when the lower is invaginated by the upper, it is called the retrograde. The last and best history of this affection is to be found in an essay communicated by Dr. John Hunter to the Transactions of a society for the improvement of physic and surgery.

The first indications of the presence of the disease, is the immoderate and frightful crying of the child, which from the twisting and contortions of its body might be supposed to arise in consequence of its suffering from severe colic. Not long after the beginning of the attack, a large stool is generally passed, and the child becomes easier for a few hours. So long as the relief afforded by this evacuation continues, it sucks greedily, and manifests no further evidence of indisposition. In a short time however the paroxysms of crying return, and frequent motions begin to be passed, consisting however of nothing but mucus, sometimes streaked with blood. Even at the very outset of the disease, the powers of the circulation are very much oppressed, and the pulse is observed to beat with astonishing slowness. This circumstance may indeed be considered as a pathognomonic symptom, analogous possibly in some degree to the slowness of the pulse, which sometimes accompanies bilious colic, but by its circumstances easily to be distinguished from that which attends one stage of hydrocephalus internus. In the complaint we are now describing it comes on suddenly, immediately after a violent crying. The measure of its frequency will then be found averaging between forty and fifty. The child continues the whole of the time to suck greedily. On the termination of the disease the patient is either cut off by irritation on the nervous system, or by convulsions, or else by true ileus from obstruction. The obstructed and inflamed ring forming the locality of the mis-

chief, is often found in astate of advanced sphacelus after death. Most commonly convulsions and stupor come on before the scene is closed.

In the treatment of this disease, we should always proceed on the supposition that it is the progressive species; and hence every medicine increasing the peristaltic motion downwards must be expected to do mischief. We therefore begin by endeavouring to reverse the peristaltic motion and to relax the whole system. For this purpose we order the abstraction of a few ounces of blood according to the age of the patient. It should be enough to induce fainting, or at all events to effect a perceptible reduction of all excessive excitement of the heart and arteries. Then should follow a long immersion of the body in a bath of from ninety-eight to a hundred degrees; after which should be exhibited an active emetic to induce vomiting. If these means fail, we may suspect the case to be one of the retrograde species, when the indication would be to increase the peristaltic motion of the intestines in their natural direction downwards by mild cathartics and injections.

Of Diarrhœa of early infancy.—When we consider the multifarious tissues of the intestines, their extent, delicacy, and sympathies, their muscular fibres, their apparatus for the formation and absorption of chyle, together with their nerves and bloodvessels, it should not appear a matter of surprise that this remarkable organ is the subject of several varieties of morbid states. The injury of one of those systems of action or organization may not only affect the rest, but this intestinal disease may influence other parts secondarily connected with them, whether by sympathy or approximation; as, for example, the stomach, liver, pancreas, etc. Diarrhœa may appear also under some variety of circumstances, both as respects its causes and the character of the evacuations. Amongst its causes we may enumerate, 1st, Milk of a bad quality; 2nd, That natural and best food in excess; and, 3rd, unusually large supplies of it after long fasting. 4th, Other and improper foods. 5th, Sudden changes of aliment. 6th, Injudicious attempts to wean delicate children. 7th, Irritation of the bowels from ill-digested foods. 8th, Deficient or redundant secretion of bile. 9th, Previous costiveness. 10th, The irritation of dentition. 11th, A morbidly susceptible state of the bowels connected with general debility.

Those children suffer most from an irritable state of bowels who are originally, in the course of nursing, most feeble, delicate, and puny.

Diarrhœa being a frequent cause of death, we cannot be too attentive to its mode of treatment. When arising from milk of a bad quality, we change the nurse. If that cannot be done, we partly wean, and attempt to feed the child with ass's milk, or partly with some spoonfuls of good beef gravy, rendered palatable by the addition to it of minute quantities of powdered sugar, or of salt. Food made with the mucilage of barley, or of wheat, well percolated and aromatised with dill or cinnamon, and strengthened by small additions of gravy, may be sometimes substituted with advantage for unnutritious milk of mothers.

It is difficult to say what, in some human milks, should be the precise peccant cause of their not agreeing with the stomachs of the proper mothers' children: it being the fact, that one woman's milk has disagreed in some cases extremely with the stomach of her own child, which has however furnished abundant and excellent nutriment to a child of the same age borne by another woman. When supposed to depend upon an excessive supply of the mother's milk, we recommend a diminution of the quantity. Voraciousness is not unfrequently a symptom of this disease. Should the diarrhœa be attended with much oppression or consequent irritative fever, an emetic should be given, with a few grains of ipecacuanha; which should be followed by the exhibition of repeated measures of calomel, with a view to the improvement of the gastric secretions. When the stools are natural in colour, but more liquid than usual, the frequency moderate, and the continuance short, we may then rely on small doses of rhubarb. We should always guard against the opposite extreme of costiveness by moderate doses of calomel. If the looseness of bowels be a supposed result of dentition, we effectually lance the gums. Under these circumstances it is not often expedient to stop the diarrhœa; while, however, it may be quite necessary to improve the character of the alvine evacuations by the exhibition of small doses of calomel two or three times a week. If the stools be acid or otherwise morbid in their fœtor, the case should be treated with rhubarb and magnesia. When mercurial and other aperient medicines are found not to improve the quality, and at the same time to weaken the subject by increasing the frequency of the evacuations, we omit them, and substitute absorbents and opiates; the latter in small doses. The march of the disease is often exceedingly rapid. It therefore is important not to lose time; and we may often save it by the exhibition of opium as an injection by the rectum. Our greatest reliance, after all, for the removal of diarrhœa is to be placed upon the vigorous use of mercurial remedies.

Of Worms infesting the Bowels during early infancy.—The worms which ordinarily inhabit the human body are of three species—the tænia, the lumbricus, and the ascaris. The tænia never occurs, however, in infants, nor in very young children. Of this variety of worm, therefore, it may suffice to state, that there appear to be two species: 1st, The tænia solium, consisting of flat-jointed portions, from a quarter of an inch to half an inch in length, with the orifices placed on the margins of the joints; 2nd, The tænia lata, with the orifices on the surface. The tænia is more difficultly removed from the human bowels than any other species of worm. The treatment is by brisk cathartics. The most commonly approved forms of cathartics are jalap and turpentine.

The lumbricus bears a considerable resemblance to the common earth-worm. There are betwixt them, however, several important differences; of which the principal may be said to be, that in earth-worms the sexual organs are essentially the same in each individual, being all hermaphrodites; whereas among the lumbrici there is evidently the distinction of male and female. For several

other differences of character see Baillie's chapter upon this subject, in his work on Morbid Anatomy; and also Dr. Hooper's valuable paper on the same subject, in the fifth volume of the Memoirs of the Medical Society. This worm is from three to ten inches long, and may exist in any part of the intestinal canal. Clusters of them sometimes creep into the stomach, and are ejected by vomiting. In some cases, if we may depend upon the reports of pathologists, they have been known to perforate their way through the parietes of the intestines, and to migrate into other viscera.

The ASCARIS is a very small worm, about one half or three quarters of an inch in length, having a long small projection at one extremity, whilst it is rounded at the other. The seat of ascarides is exclusively the rectum. No animalcules similar to them have have ever been found to live out of the body, nor can they by any human art be made to exist for any length of time, after their expulsion out of the animal body.

Of the origin of intestinal worms, there have been entertained various opinions, which have, for the most part, been exceedingly unsatisfactory. One hypothesis is, that their ova are taken into the stomach with the food. But to this it is objected, that they have been met with in the bodies of children who have never taken any food except their mother's milk; and, secondly, that they have been found in the meconium of still-born infants.

Another hypothesis to account for them, is that of equivocal generation: but this is not supported either by any distinct analogy nor by any direct proof. Linnæus offered the suggestion, that the ova of these insects are formed at the ame time with the other rudiments of the animal: but this notion scarcely removes any of the difficulty.

Different opinions have, moreover, been entertained as to the uses of worms in the animal economy. It has been asserted, that worms have occasionally been found in healthy subjects, both of men and animals; and it was especially observed by Mr. Keppel, that in a number of rats which he dissected, worms were found in all the livers of those that were plump and healthy, and vice versa; and therefore he inferred, that worms are probably intended to consume putridities and acrimonies, which find their way into the intestines. If this was true, we should never meet with slimy and fetid stools during the presence of worms; which experience, however, proves is far from being the case. Again, it has been supposed, that worms are intended to increase the peristaltic action of the intestines. But that worms can be proved to exist at all in the human intestines, during a perfectly healthy state of the constitution, is very doubtful.

MORBID SYMPTOMS INCIDENT TO THE PRESENCE OF WORMS.—The first derangement takes place, as might be expected, in the gastric system. The appetite, in most cases, presents a remarkable irregularity, being often astonishingly keen, whilst at other times it is languid even to loathing. There is often great craving for food after a full meal; and this may be considered a strong indication of the disease. The bowels are sometimes costive; but more frequently,

the motions are loose; the motions are fetid, slimy, and occasionally streaked with blood. The stools are generally much too pale, and the dejections, at uncertain intervals, accompanied by fits of colic, alternating with periods of sickliness and squeamishness. The diarrhœa is either continuous, or returns in paroxysms from time to time. The countenance at length loses its usual bloom of health, and looks languid, thin, and pale. In the progress of the disease, a small dry cough supervenes, and the body becomes emaciated, with general feverishness, fetid breath, tumid lips, enlarged abdomen, livid circles about the eyes, frequent pain of the head, and a depressed expression of the features. At length the nose, like the upper lip, becomes swelled, and the child is observed to pick its nostril almost incessantly. During sleep, it is moreover observed to grind its teeth, and in other respects to distort its countenance. The pupils of the eyes become gradually dilated, and at length hectic or other general irritative fever supervenes. The symptoms then begin to resemble other diseases, including those of hydrocephalus, as well as almost all those, as was observed by Dr. Rush, of the entire class of neuroses.

It sometimes happens that the diagnosis between worms and the diseases which they have sometimes simulated, has been accompanied with difficulty. It was once believed, that the swelling of the upper lip might be safely depended upon as a characteristic symptom: but it is now well known, that intumescence of the upper lip is a common symptom in strumous habits, as also in strumous affections about the nostrils and mouth in those habits. Picking of the nose should not even be considered an absolutely pathognomonic symptom; as it is also a symptom common to almost all derangements of the alimentary canal; whilst that of grinding the teeth during sleep may be made the subject of a similar remark. The true method of forming our diagnosis should be, in the first place to ascertain the presence of the worms, and then to compare that fact with our knowledge of the previous state of the patient and of the symptoms at the first attack. The irregularity of the appetite, the speedy craving for food after a meal, an attack of looseness or a sense of sickness shortly after eating, together with occasional colic pains, afford the most certain and characteristic marks of the presence of worms.

It is easy to distinguish between the presence of lumbrici and that of ascarides. It is the lumbricus alone which produces morbid symptoms of the general system; whilst ascarides, especially in the first instance, occasion only those of local irritation, such as tenesmus, diarrhœa, itching about the parts, etc. unattended by general derangement of the system. How worms in the intestines come to produce symptoms of general constitutional disturbance is a curious question; 1st, whether simply by acting on our general susceptibility of irritation; or, 2dly, by preventing or injuring the due performance of the function of absorption of chyle; or, 3dly, by their bites, acting on the nervous system; or, 4thly, by a combination of all these modes. These are questions which we are by no means prepared to answer.

Of the Treatment.—The indications of cure are, first, to produce the expulsion of the worms; secondly, to palliate the symptoms induced by them when practicable; and, thirdly, to restore vigour to the system. The medicines used to expel worms, called anthelmintics, are divided into chemical, or those which destroy by poisoning them; mechanical, or those which procure their expulsion by attrition, and by exciting the intestines into violent action, or a combination in the same formula of these several powers. The most common of chemical remedies are preparations of mercury and antimony and sulphur, or combinations of the first of these with muriatic acid, or of muriatic acid with alkalies. Of this latter combination was the common salt, which, during the middle and latter part of the last century, was a very common anthelmintic, with all classes of the population of England and Scotland. The present most prevailing practice consists in exhibiting calomel and jalap in the proportion of three or four grains of the one to ten or fifteen of the other, according to the special indications of the case. The sulphate of magnesia would probably furnish as powerful a remedy for worms as muriate of soda, provided children could be as easily induced to take it. Directly mechanical remedies are seldom resorted to in modern practice.

The dolichos pruriens was at one period a very fashionable remedy of this class, and in hot climates a very useful one. The part used is the hairy covering of the bean of the plant. In this country its effects proved so formidable as to lead to the deprecation of its use: whereas in warm climates the increased and plentiful secretion of mucus, which we may presume more effectually to defend the intestinal surfaces in those countries, made it a safe remedy. The principal mechanical remedy resorted to in Great Britain is tin filings. The filings of tin may be exhibited in large quantities; namely, in quantities of from half an ounce to two ounces for an adult, and in proportional quantities to children. The remaining remedies of this class of medicines are those which have the effect of acting on the worms by their attrition, and of poisoning them by their chemical qualities. These are the Semen Santonicum, or worm seed; chamomile flowers; and the Gœffræa Inermis, or cabbage-tree bark. The worm seed is a powerful anthelmintic. It may be given in the dose of from one drachm to two of the powder to the adult, in any proper vehicle, and in proportional quantities to younger subjects. In exhibiting it to children, the vehicle should be a sirup or conserve. At one time, chamomile flowers powdered, was very fashionably exhibited in our public hospitals, as an anthelmintic. The dose to the adult was about one scruple. A decoction was also used as an enema, for the expulsion of ascarides. To this was added occasionally, a few drachms of castor oil, or sometimes of other inferior oils on the score of economy: it being the fact, that nests of ascarides cannot long sustain life if inundated with copious oleaginous injections. The Gœffræa Jamacensis, or the worm bark tree, has not for many years been made available as an anthelmintic in the practice of this country. The first published description of it was given by Dr. Wm. Wright,

in Pt. II. vol. 76 of the London Philosophical Transactions. In the practice of England and Scotland, the action of this medicament proved too violent, by inducing dangerous vomitings and purging. When too active, the effects may be counteracted by well washing the stomach with warm water, purging the intestines with castor oil, and giving the patient plenty of thin gruel, acidulated with vegetable acids. Vegetable acid is said to be a specific against its deleterious effects. See a paper on this subject by Mr. Anderson, in the fourth volume of the Medical Commentaries. The best remedies for ascarides are oily enemata, alternated with full doses of calomel and jalap. The best remedies for the tapeworm, were it necessary to suggest it here, are also still ampler and more frequently repeated doses of calomel and jalap, or of tincture of jalap in compound decoction of aloes, and of large measures of the oil of turpentine. The best general anthelmintic undoubtedly is calomel, given in repeated doses with purgatives, to remove the morbid contents of the intestines, and then without purgatives to improve their secretions. It is usual to prescribe tonics after a course of anthelmintics; when bark and steel are exhibited in preference to most medicaments of this class.

Of Aphthæ of early infancy.—The thrush consists of an eruption of white pustules, extending in some cases over the whole mouth from the fauces to the utmost limits of the edges of the lips. It is a disease which principally occurs within the first month; although there have been instances in which it has extended beyond that period. Of this affection there are two varieties; a local one consisting simply in a painful ulceration of the interior of the mouth; and a more general affection producing serious derangement of the system. The local species is generally considered as a mere sore mouth, presenting the appearance of an eruption of white pustules, resembling particles of curdled milk, at first at some distance from each other, but gradually spreading, and at last confluenting together, so as to form one complete crust. This crust may at first be observed to be white; but it gradually becomes of a yellow colour, harder to the feel, and at last may be observed to loosen from its attachment, and to drop off, leaving the surface which it had previously covered remarkably red. If by any means it be prematurely forced off, another crop immediately succeeds in larger quantity than the first. This will happen successively, if the existing crop is not allowed to ripen and to fall off spontaneously. In this species of the malady there is usually no danger to be apprehended. The child suffers but little from it, and for the most part only for a few days. It cannot however grasp the nipple so firmly as usual. The appearance of aphthæ soon after birth is commonly the result of mismanagement in giving the child too much spoon meat. So commonly does this indeed take place, where much feeding with spoon meat is recurred to, that we may generally prognosticate the event whenever this practice is followed. The treatment of this form of thrush is very simple: little indeed need be done. When allowed

to run its own course, and the crust, when formed, is left to drop off spontaneously, it seldom returns again. It may be expedient, however, to prescribe some local application to prevent nurses from interfering too rudely in supplying applications of their own. Our usual application is a linctus consisting of borate of soda, with sirup or honey, in the proportion of a drachm of the borax to an ounce of honey or sirup. This linctus is applied in small portions over the aphthous surface. A solution of the borate of soda in water should, however, be considered as possessing somewhat greater power. A pint of boiling water dissolves one hundred and eighty-three grains of the salt. Aphthous eruptions are sometimes attempted to be removed by astringent applications, used by means of a probe, with a piece of rag tied round it. All these means, however, are improper. When the crust begins to harden, we may use the borax in sirup, or a linctus of sirup of roses slightly acidulated with sulphuric acid, or currant jelly dissolved in water, having for our object to do nothing actively as to the use of topical remedies, and but simply to wait until nature shall have fulfilled her intentions. Excessive quantities of spoon meat during the first days after birth having been considered the more frequent cause of the form of thrush just noticed, the more immediate remedy of the malady will consist in putting the child as soon as may be to the breast. But that might prove some little inconvenience to the mother, as the aphthous mouth of the child will seldom fail to occasion soreness of nipples, and vice versa. This fact being well known, it would be proper to advise the mother to suckle her infant through a shield, until the thrush should be cured. If the functions of the infant's bowels be irregular, the alvine evacuations being acid as to their fœtor and various in their consistency; calomel with absorbents might be exhibited from time to time; or small doses of well-levigated rhubarb might be added to twice or three times its weight of magnesia.

The other and more formidable variety of thrush is often of an alarming and very malignant nature. This form of the disease would seem to depend on a general derangement of the system. It appears most commonly in the winter season, and is endemic in moist situations and in humid countries, is most frequently to be met with in crowded families, and among the poor, and is occasionally a visitor, under this more malignant type, epidemically amongst the infants of lying-in hospitals. The period at which it usually makes its attack in this form, is about ten days or a fortnight after birth, but earlier in many cases. Its invasion is preceded by symptoms of pyrexia and great prostration of strength. The fever is ordinarily ushered in by a state of great inaction and stupor; the child is observed to sleep continuously for many hours. In twelve or twenty hours after this febrile attack, small pustules make their appearance within the mouth and about the edges of the lips. When the pulse, although before not distinguishable, becomes more perceptible to the touch, the eruption becomes more complete. The pulse subsequently becomes gradually firmer, and at the same time a complaint in the bowels supervenes,

accompanied by a degree of oppression and a difficulty of breathing, and sometimes by a continuance of the drowsiness which had presented itself at the commencement of the disease. When the aphthæ are nearly out, especially if they be of a good white colour, and the pulse should rise and become firm, accompanied by a general warmth diffused over the greater part of the body, we may ordinarily consider the danger as being in a great measure over. In some of the worst forms of aphthæ, convulsions supervene; when the eruption presents, it for the most part assumes a dusky hue, after which it soon becomes livid and quickly fatal. In hospitals, and more especially in some of the extensive hospitals in Paris, this malignant form of thrush has occasionally committed, dreadful ravages. Its great fatality in these cases led, some years ago, to the publication of some of the most excellent essays which we find recorded on this subject. See Vol. viii., Mem. of the Royal Medical Society of Paris. This worst form of the disease may no doubt, in a great number of cases, be traced to the influence of contagion. But, on the other hand, it is scarcely to be considered less certain, that cases of the milder form of thrush, when surrounded by circumstances of filth and insalubrity, may be exasperated into forms of great danger and malignity.

From the bowels being affected in this disease, it has been supposed that, in some cases, it begins in the stomach, and gradually extends upwards along the œsophagus, and downwards along the intestinal canal. In other cases, it is supposed to begin in the mouth and fauces, and to creep downwards along the whole course of the alimentary tube, even as far as the anus; and the small spots about the anus, the result of the irritation of the acrimonious evacuations accompanying the disease, would appear to give countenance to this opinion: but inspection of many bodies after death, entitles the author to assert positively that this is not the fact. The prognosis may generally be considered as favourable, when on the falling off of the first crop of the eruption the pulse rises, the expression of countenance improves, and no convulsions supervene.

In this form of thrush, our remedies must be chiefly constitutional. The first indication, according to the practice of some of the most eminent foreigners, should be to exhibit an active emetic. For this purpose, a small quantity of ipecacuanha powder, amounting from four to five grains, should be forthwith exhibited, and this should be immediately followed, in cases of extreme depression of the powers of life, by a teaspoonful of good white wine; a mode of exhibiting an emetic under these circumstances which the author deems preferable to the use of the ipecacuanha wine of the shops, as being more to be depended on for the operation required of it. After the full action of the emetic shall have passed off, three or four grains of calomel should be exhibited without loss of time, and be followed, in about four or six hours afterwards, by a teaspoonful of castor oil. But the rectum might perhaps be sooner discharged by gentle laxative clysters. The other principal indication is to support the strength; and for this purpose we begin early with the administration of cordials, such as white-wine

posset, compound aromatic spirit, and such quantities and preparations of bark as the stomach of the infant might be expected to retain. With the same general intention, the tincture of bark might from time to time be exhibited by the rectum, in the form of an enema, with mucilage of starch. If these means prove insufficient, if the child continue feeble, with coldness of the extremities and no perceptible pulsation at the wrists, together with a death-like appearance of the countenance and much oppression in the breathing, we should consider of the propriety of applying a blister behind one or both ears. In the midst of circumstances of this description, it is obvious that we must be very guarded in our prognosis, it being probable that the child's life might be speedily extinguished in a paroxysm of convulsions.

As to the local treatment we cannot well expect, in cases of malignant thrush, to succeed in removing the aphthæ by any topical remedies, until the thrush is about to separate spontaneously as the result of constitutional action. As, however, families will generally feel more comforted if supplied with local applications of an innocent nature, there can be at least no harm in indulging them. For this purpose Van Sweiten, whose residence furnished him with great experience in the treatment of malignant thrush, was in the habit of prescribing sirup of turnips. The most common remedy in this country, as has been already stated, is borax, in the form of a saturated solution in water, or mixed with honey or sirup. Some writers have used it in the form of a small portion of it in powder put upon the tongue, and have supposed it to produce, when so used, a better effect than, from its sensible qualities, could have been expected from it.

Of Dentition.—The constutional changes incident to the first dentition may be considered as properties essentially connected with the gastric functions, and as phenomena inseparable from the actions of the mucous membrane.

Dentition is generally attended with considerable irritation, and often indeed constitutes the first pain of consequence which an infant has to sustain. But the pain and irritation are in very different degrees in different individuals. The most usual period at which the pain and irritation of teething commence is about the fourth month. The process continues from that time till about the eighteenth, twentieth, or twenty-fourth month. The common progress is as follows :—The two middle incisores of the lower jaw first appear, one generally about a week or ten days before the other. But before they make their way through, the gums are seen swollen and more than usually lubricated with saliva. About this time the infant endeavours to put everything into its mouth, frequently bites the nipple, and the saliva is obviously secreted in greater quantity, the mouth at the same time feeling hot and appearing as if irritated by inflammation. About the same period the bowels are often deranged, the child being affected as if suffering from a cold. Eruptions now and then appear upon the face, especially high upon the cheeks; the little subject gradually losing its

colour and wasting in its flesh. The gum is raised into a ridge or rapha along its middle, on each side of which the teeth can be seen shining through more or less distinctly. After having cut their way through, the child soon recovers its usual cheerfulness and healthy appearance. Having enjoyed an interval of about a month or six weeks of freedom from irritation, the same assemblage of symptoms again return, and the two corresponding incisores of the upper jaw appear. After a similar interval of about the same duration, the two first molares of the lower jaw and soon after them those of the upper jaw cut the gum. Between the sixteenth and the twentieth month the cuspidati appear, and from that period to the twenty-eighth or thirtieth month, sometimes as early as the twenty-fourth month, the posterior grinders make their appearance. So that the child is usually in possession of all its first set of teeth before it is two years and a half old. All these teeth exist ready formed in the fœtus.

The morbid symptoms induced by teething are, 1st, those of local irritation; and, 2ndly, those of the general system. The symptoms of local irritation are inflammation and swelling of the gums, with increased secretion of saliva. The affections of the general system are eruptions of the skin, wasting of the flesh, cough, diarrhœa, vomiting, ophthalmia, and convulsions. We judge of any general affection of the system by the previous history of the case. If, before the general derangement of the system, the child shall constantly have rubbed its gums, salivated much, have had griping pains in the bowels, and often bit the nipple, we may rest assured that the derangement is in consequence of teething, and we are confirmed in this opinion by examining the mouth, the teeth in many instances presenting themselves strongly within the gum, SOMETIMES EVEN FOR MONTHS before their entire protrusion. Hence an inexperienced practitioner may be easily deceived as to the time when a tooth is likely to perforate the gum. When not very likely to make its way speedily through, the gum covering it is observed to be quite thick, and not at all put upon the stretch, and there is a very regular ridge along the middle of it. But, on the contrary, when near at hand, the gum above it is quite raised, more or less perfectly transparent, and instead of a regular ridge over the protruding tooth, this rapha disappears, and the upper part of the gum assumes the form of an elevated convex surface, having an indistinct resemblance to the elevation of a small blister.

OF THE TREATMENT.—When the symptoms are quite mild, when the irritation and fretfulness are moderate, we have very little to do. We then attend simply to the state of the bowels, taking care however that no drain, whether natural or from accidental excoriation, should be allowed suddenly or incautiously to be suppressed. The diet should be either exclusively the mother's milk, or that aided by frequent supplies of good gravy, or, at least, of strong beef-tea, cleared from fat. In the mean time, frequent exercise in the open air, without allowing the child to be chilled through by too long exposure to its action, should be enjoined. The process of protrusion may be promoted by

mechanical pressure, by allowing the child to have something wherewith to rub its gums. For this purpose a wax candle, or a piece of liquorice root, or of a tough crust of bread, not likely to break, will be found both safe and useful. The harder substances not unfrequently used, such as coral, ivory, rods of glass, etc., are improper, from their tendency rather too much to bruise the gum.

When the local irritation is very considerable, and when especially the symptoms of general derangement are urgent, we must have recourse to incision of the gums. This practice is safe and easy, and can be repeated as often as necessary; and even should the incision be followed by a cicatrix before the tooth might protrude, the objection would be of no manner of importance. On the accession of convulsions, this is the only means in our power by which we could ensure the preservation of the child's life. In every case of this kind we should therefore urgently advise the cutting of the gum. This is best done, of course, by a proper gum lancet. We should cut in a direction not immediately on the line of the ridge, but upon the body of the tooth, somewhat anteriorly to it. This remark applies exclusively to the single teeth. When the gum covering the double teeth is to be cut, the incisions are to be made crucially from corner to corner inclusively. No edge or angle of tooth should be left even partially covered by a membrane, through which it should be permitted most freely to make its escape. The most convenient mode of performing the operation is by placing the head of the child upon and between the thighs of the operator. This position of the little subject will give to the practitioner ample power to examine accurately his case, and freedom to do all that may be necessary for its relief, without the chance of failure or of successful resistance to his intention. When much irritation remains after this operation has been performed, for it generally gives immediate relief, we must have recourse to bleeding by leeches, or by cupping glasses, according to the quantity of blood required to be abstracted. If convulsions are threatened, the mode of taking blood by cupping would be preferable to the employment of leeches. In full and plethoric children, especially if during the hot weather of summer, it will be both safe and useful to effect the abstraction of from three to four ounces of blood, if we suppose the child is cutting either its canine or double teeth. Should the cephalic symptoms continue still to threaten, it might be advisable, after the drying up of the bleeding consequent upon the cupping or the leeches, to apply a largish crescental blister behind one or both ears. The bowels should, in the mean time, be kept in an actively solvent state by full doses of calomel. The author presumes that much of the danger of dentition depends upon an accompanying torpid state of the hepatic system, and he therefore considers that the exhibition of calomel in the cases under consideration on a vigorous scale should form a most important part of the treatment. He often, therefore, prescribes calomel powders to be given every three or four hours in the doses of from two to four grains, according to the age and other

circumstances of the child. The irritative fever accompanying dentition may often be greatly subdued by having recourse to the warm or tepid bath. The cold-bath has been recommended under the same circumstances by Doctor Burns; but this is not always a convenient mode of reducing the temperature of children, as it sometimes is found to make too great an impression on their fears; whereas ultimately the warm-bath produces the same effect without being attended by the same inconvenience. We should repeat the warm-bath, or any bath which may be deemed advisable, not only morning and evening, as has been too frequently recommended, but from time to time every four, five, or six hours, according to the demands of the case, measuring that demand by the slowness or quickness of the re-accumulation of the morbid temperature to be subdued. In the event the head should remain after these measures obstinately more elevated in its temperature than other parts of the body, measures should be forthwith adopted to reduce its excess of heat. The reader must here be referred to descriptions of modes for reducing the temperature of the head, already several times given in the course of the present work. Should a case of dentition be accompanied for a long time by an exhausting diarrhœa, that symptom should be obviated by inducing a more healthy action of the intestines, by means of repeated doses of calomel.

It may deserve consideration as to how far it might be safe, under these circumstances, to have recourse to opiate injections. It is certain that a very great number, if not the majority, of children who die from dentition, perish in consequence of obstinate or neglected diarrhœa.

Spasmodic affections of the larynx and trachea, which not unfrequently accompany dentition, are too frequently intrusted to trifling and temporising treatment: such as having recourse to the occasional use of the warm-bath, and to the exhibition of quack medicines. They form, however, an important symptom, requiring for the most part free lancing of the gums, active purging with calomel, and not unfrequently abstraction of blood on an effective scale and commensurate with the supposed pressure of the symptom. It would occupy too much of our present opportunity to go at greater length into a description of all the symptoms of dentition, but one general rule may be laid down for our conduct in the management of all of them; namely, to treat them actively on the general principles we have just recorded, with the additional practice of lancing the gums.

## OF THE CIRCULATION OF BLOOD IN THE FŒTUS, AND SOME OF ITS PRINCIPAL DERANGEMENTS.

At the period of birth, singular and important changes take place in the circulation of the blood, which are the necessary consequences of the new medium in which the infant has now to exist. The supply of arterial blood up

to the time of birth is derived from the mother by means of the placenta, though it is still a disputed point whether any of the parent's blood passes directly into the circulation of the fœtus, or whether the blood of the latter merely becomes changed in its circulation through the placenta from venous to arterial blood, by deriving from the vessels of the maternal portion oxygen and other matters, which may be necessary to render it fit for the nutrition of the new-formed being. When, however, the child issues from the parturient passage, it comes in contact with the atmosphere, which affords it an opportunity of effecting the necessary changes in the quality of the blood through the medium of the lungs. At this time the communication with the parent is cut off by division of the funis. The blood which formerly passed from the right auricle of the heart through the foramen ovale into the left auricle, and through the ductus arteriosus into the aorta, is now invited, by the suction-power produced by the new action of the respiratory muscles, to pass along the pulmonary arteries into the lungs; and it is at the same time compelled to flow in this direction, by the gradual filling up of the foramen ovale and obliteration of the ductus arteriosus; and thus the pulmonary circulation is established. It happens, however, occasionally, that, owing to some interruptions in the natural process, the changes above-mentioned are not perfected; and this proves a serious calamity, soon producing general disorder of the vital functions, and, amongst other symptoms, a peculiar blueness of the skin. This symptom has been elevated by authors into the situation of an idiopathic disease, called MORBUS CÆRULEUS by the older writers, and CYANOSIS by those of the present day. Under this term are included the various effects produced by the arrest of development in the circulatory apparatus now under consideration, as well as the blueness of the skin which arises from other causes. It is not difficult to understand how the imperfect obliteration of the foramen ovale and ductus arteriosus gives rise to the discoloration, as it is evident that two large columns of venous blood, which should be sent to the lungs for the purpose of aeration, pass at once into the general circulation without sustaining the proper change. The whole of this blood is in a state unfit for the purposes of life, and as it forms a considerable proportion of the quantity in circulation, the system soons begins to suffer, nutrition is impeded, great debility ensues, and a portion of carbonaceous matter is deposited under the skin, giving rise to the blue colour, so characteristic of the organic defect. The discoloration almost always takes place immediately after birth, and is increased and attended with difficulty of breathing whenever the child is in any-wise agitated, whereby it is also disposed to throw itself into the horizontal posture, and from this state the infant is very liable to become convulsed.

All the above-mentioned disorders would arise in an equal degree from imperfections of the septum between the ventricles of the heart; also in cases where the aorta communicates with both ventricles: and instances of both have occurred.

If the aperture be in the ductus arteriosus, the patient in most cases soon sinks under the complaint; but if the aperture be in the inferior parts of the heart, infants more commonly survive for months, and even for years; being peculiarly subject, however, to pulmonary disorders.

As it is out of our power to remove the cause of the mischief, our efforts for relief are wholly confined to palliatives. From instances which have occurred to Breschet, Bertin, Fouquier, and others, it seems most probable that the deposition of the blue matter arises more from the feebleness of the cutaneous circulation consequent upon the general debility, than from the highly carboniferous state of the blood; and Mr. John Hunter proved by experiment, that if the circulation of an artery be impeded but for a short time, the blood lost its arterial hue, and acquired a purple colour. In all instances of extravasation the parts present the same aspect. This consideration points at once to an indication for treatment: viz., to use means for determining energy to the surface, in order to promote the circulation in the cutaneous capillary vessels; and this especially should be attempted during the occurrence of a paroxysm. Warm-baths containing mustard and ammonia, exciting frictions, and gently stimulating drinks, are among the best means for effecting our purpose, and we understand that they have been successfully used in America. New York Med. Repos., vol. i., art. 8, p. 496. The bowels should also be kept in a soluble state by mild aperients. It is manifestly an object in these cases to gain time, and if we can prevent the more immediately fatal consequences of one convulsive fit, nature has an additional opportunity of repairing the original mischief.

### OF CERTAIN DISORDERS OF THE RESPIRATORY SYSTEM.

We have already observed that defects and derangements in the circulating system tend constantly to produce irregularity and mischief in the function of respiration. In addition to this, experience teaches that the period of infancy is peculiarly liable to inflammations of the trachea, bronchi, and air cells. These several affections therefore demand a notice in this work.

Of Croup.—This disease, called by Dr. Cullen CYNANCHE TRACHEALIS, and by pathologists of the present day TRACHEITIS, is frequently met with in children from the age of one to nine years, and sometimes, but not often, during the period of lactation. Infants, however, who are brought up by the hand, are not seldom the subjects of this affection at various intervals during the first twelve months. The disease consists essentially in acute inflammation of the mucous membrane of the trachea, which extends more or less upwards into the larynx, and downwards into the bronchi. It causes very rapidly the internal surface of these canals to be lined with a tough membranous exudation; which, as it diminishes their caliber, threatens the patient with suffocation, and induces violent coughing together with efforts to expectorate; by

which it harasses the little sufferer, and increases the mischief by determining more blood to the inflamed parts.

The disease occasionally is attended by well-marked precursory signs, consisting of short cough, slight hoarseness, difficulty of breathing, flushed face, restlessness, slight rigors, quick pulse, and anxious countenance: but not unfrequently its commencement is very sudden, and its progress awfully rapid. A robust child in high health will go to bed without the least sign of disorder, having eaten heartily its usual evening meal, and will sleep soundly till perhaps two or three o'clock in the morning; when its nurse is awoke by its crying and the ominous ringing of the characteristic cough, and when also she will discover the existence of the other symptoms above enumerated. The cough is very peculiar, having a harsh metallic sound. After having been once heard and recognised, it can never afterwards be mistaken or confounded. As the mischief advances, the symptoms become more marked, the difficulty in respiration constantly increases, the voice is either altogether lost or quite altered, the colour of the face assumes a livid hue, and a cold perspiration is seen on the forehead and around the eyes; the eyes are prominent and often suffused, whilst the head is thrown backwards, and in the extended neck are seen the strongly pulsating carotids and over-loaded jugulars. During the day it often happens that there is a remission in the severity of these symptoms; but as the evening again comes on, they return with accumulated force to prosecute their destructive work; and if decided measures be not adopted to arrest their progress, the case will rarely fail to terminate fatally.

As soon as the disease is ascertained to exist, no time should be lost in resorting to the proper remedies; which in all cases, in the first instance, must be of a depletory and antiphlogistic nature; however, the extent to which they must be used will have to depend upon the age of the patient, his constitution, and temperament. Robust, fat children, with rosy cheeks, are, according to the author's experience, those most liable to the malady, and have it in its most severe forms. In such cases, if the inflammation has made any progress, and the child is two years old or upwards, the operation of venesection should be resorted to, and from five to nine or ten ounces of blood, according to the age of the child, should be abstracted without loss of time. In addition to this, some leeches should be applied over the trachea and larynx, and, upon their removal, a warm poultice. At this period great good is produced by immersing the lower half of the body in a hot-bath; by which a copious perspiration is induced; and the effect may be kept up by an emetic, consisting of from half a grain to one grain of tartarised antimony, dissolved in some sugar and water. The use of these remedies will often be sufficient to cut short the disease, after which we have only to combat its effects. When, however, the diseased action shall not have yielded to the foregoing treatment, we must proceed at once to the use of mercury. From one to three grains of calomel may be given every one, two, or three hours, according to the circumstances of the case; and at the same time, the strong mercu-

rial ointment may be rubbed into the arms and legs, until the system shall become sensibly affected by it. A blister may also be applied over the upper part of the chest. Mercury is an especially valuable medicine in these cases, as it immediately tends to control the inflammation and to arrest the secretion of the adventitious membrane, as well as to induce the absorption of the latter when produced. The emetic also seldom fails to restore the natural secretion of the mucous membrane, and so to loosen the adhesive substance which lies upon it; whilst the effort of vomiting enables the patient to reject it after it shall have been separated.

It seldom happens that the most violent attack can resist the means of cure now pointed out, if they be applied before the vital powers of the sufferer begin to fail: but there is still much to be done even after the acute symptoms shall have been subdued. The difficulty of breathing may be lessened, and the state of the tongue and of the countenance may be improved; but there will still inevitably exist much general fever and irritation. The cough, moreover, though it be improved in its character, will continue for some time troublesome, and the dyspnœa will recur in frequent paroxysms, from the great tendency to spasm which now exists in the injured parts. Our next objects therefore will be to allay fever and spasm, and gradually to begin to support the patient's strength. For a child of two years old, the following prescription will be found well adapted to meet those indications:—

R. Potassæ Chloratis, gr. xv. Acid. Hydrocyanici, gtt. ij. Syrupi Rhæados, ʒij. Aquæ Menth. Viridis, ʒiij. M. ut fiat mistura.

Detur pars sexta 4ta quaque hora.

Bread and milk, beef tea, and arrow root, will now be suitable food. In children of a lymphatic temperament, the progress of the disease is less rapid, and the symptoms less severe; the treatment therefore must be proportionally milder. The general bleeding might then probably be adopted on a more moderate scale; whilst care should be taken that too much blood be not allowed to flow from the orifices of the leech-bites, as the patient might be reduced by it into a state of dangerous exhaustion. If the attack is not very severe, and is discovered at its very commencement, the mischief may be almost positively arrested by applying a sponge dipped in very hot water to the outside of the throat; or, with the same view, a poultice made of warm onions or turnips, with the addition of a very small quantity of mustard, might prove a very useful application. The author has seen such remedies, combined with the hot-bath and an active purge, arrest the progress of the disease. It often happens that a chronic irritation will remain for some time about the muscles of the trachea and larynx, producing cough; and on exposure to cold there will be a recurrence of the croupy cough, without being accompanied with the violent symptoms of the first attack. In such cases the pulse will not be remarkably quick or full, nor the general heat much raised. To relieve this condition, it is not necessary to have recourse to very severe measures: an emetic will often prove sufficient, or in worse cases a few leeches applied along the course

of the larynx and trachea. When the disease has been neglected, and remedies have not had time to produce their effect, and the patient seems to be on the eve of suffocation, tracheotomy has been advised: but less success must be expected from the operation in this case than in laryngotomy, where the inflammation is confined to the higher parts of the windpipe. Having now stated the leading facts of importance connected with croup, we will proceed from the trachea to the bronchi, and briefly consider such of its lesions as are of common occurrence during infancy.

Of Bronchitis.—Inflammation of the Bronchi occurs very frequently as a complication of measles, and also during dentition: but it may likewise be an idiopathic affection, the result of exposure to cold and other analogous causes. In all these varieties of the malady, its symptoms, course of progress, and termination, are much the same, and the treatment must be identical. In measles, the whole extent of the mucous surface from the eyes and nose to the air-cells of the lungs is the seat of a catarrhal inflammation; which indeed constitutes the chief object of the physician's anxiety during the period of greatest danger of this very frequent and epidemic malady. In a majority of cases it is allowed to terminate by resolution, without the employment of any active remedies; but occasionally the inflammatory action runs so high, as to demand the same active treatment as when bronchitis occurs from any other cause. The general symptoms are at first, a constant dry cough, which the patient endeavours to shorten and suppress on account of the soreness and sense of constriction which are felt at the chest; short and quick breathing, flushed face, staring eyes, very rapid pulse, great heat of the skin, thirst, nausea, and vomiting, together with headache, indicated by throwing the head about and the hands above it, as well as by its unnatural heat. The physical symptoms are not less important, and should always be attended to. Percussion will scarcely give more than negative information of the state of the chest. But this may be valuable, as it serves to distinguish bronchitis from peripneumony. Auscultation, however, never fails to throw light upon our path in this disease. By observing the amount of mucous and sonorous rattle, especially the frequency and extent of the latter, we are enabled to determine very satisfactorily the amount of the mischief, together with its limits and locality. The character of the respiration under these circumstances is a good indication as to the extent or magnitude of the mischief. If there be much inflammation and consequent filling-up of the caliber of the tubes on one side or in one part of the pulmonary system, the air in the parts less affected passes with great rapidity, producing a loud shrill sound, which, occurring in the adult, is called puerile respiration, but which term is of course less applicable to this condition in the child. We have now gone over the chief symptoms of this particular disease, and they point pretty expressively to the means of cure. The inflammatory action must first be combated by the abstraction of blood, and this is generally effected either by the application of a good many leeches to the upper part of the chest, or by cupping

from between the shoulders: if the first use of this remedy do not seem to control the mischief, the latter should be resorted to. The more intense forms of bronchitis during measles require the abstraction of blood on a vigorous scale. The bowels should be kept freely open, and diaphoretic medicines will be found most useful in mitigating the heat and harshness of the skin. The same combinations of prussic acid and chlorate of potash recommended for the second stage of croup will prove useful in this attack; and after the vessels shall have been unloaded, a blister applied to the lower parts of the chest will be proper if the attack should prove obstinate. It too often happens however in this affection, that our best efforts prove fruitless. Owing to the vitiated supply of blood sent from the lungs to the brain, the latter organ becomes disordered, its vessels lose their tone, a certain amount of inflammation is produced either in the membranes or the substance of the lungs themselves, effusion ensues, the vital powers of the child are not sufficient to cope with both diseases, and do whatever we may it falls a victim to their combined effects.

Of Peripneumonia.—Inflammation of the air-cells themselves is not an uncommon malady during dentition, although it is difficult to understand how the latter should give rise to the former. This affection is sometimes complicated with bronchitis; but it more frequently occurs alone, and is quite a distinct disease, and easily recognised by its physical signs. The general symptoms however of it and inflammation of the bronchi are not very different. In the former the face is generally pale, while in the latter it is flushed. In peripneumonia the sputum is viscid, and has a rusty tinge; while in bronchitis it is frothy, and often seems as if mixed with a small portion of soot. But these last signs are not valuable in cases of children, as they seldom reject this secretion from the mouth. If percussion is employed over a part of the chest where inflammation of the air-cells has existed long enough to have thickened their coats and filled them with the characteristic albuminous secretion, and to have caused thus consolidation of parts which ought to be light and porous, corresponding results are produced in the sounds afforded. Instead of loud resonance, a dead short sound is heard when the part is struck; and if the stethoscope be applied, the crepitus rattle is a sure and certain evidence of an actual mischief within. Having determined the nature of the mischief by these means, we have next to employ the curative remedies in our power. When peripneumonia or bronchitis seems to be connected with the irritation of teething, and we find the gums swollen, red, and transparent, we should as a first measure employ the gum lancet freely. At this period of life, bleeding from a common vein is scarcely practicable; we must therefore apply leeches, and follow these up by a blister, which it would be best to apply immediately to the part affected. It is also desirable to employ mercury until the mouth becomes slightly affected: but the operation of this medicine should always be carefully watched, as ptyalism in children is sometimes attended with serious

consequences. The general treatment here is much the same as that of the preceding disease; and as in that a fatal result often takes place secondarily from an affection of the brain, so is it too frequently the case in this almost equally dangerous malady. If the head is seriously and obviously affected, and the strength of the child not too much reduced, it may be well to take blood from the jugular vein, the author having generally found temporary good at least to result from that remedy, though it too frequently happens that after all the life of the patient falls a sacrifice to the disease.

Of Pertussis.—As hooping cough is more frequently met with during infancy than at any other time of life, its consideration claims a place in this work. Like other infectious diseases it very often prevails as an epidemic. Not only does it pass successively through different members of a family, but a whole neighbourhood is simultaneously affected by it. It comes on with the common symptoms of fever which attend the cough throughout its acute stage, and is proportioned to the severity of the attack. In a very large number of cases, no treatment is employed, and the little patients are allowed to follow their ordinary pursuits; coughing with the peculiar whoop, and vomiting at frequent intervals during the day, until the disorder subsides spontaneously. But neglect of remedies in this affection is by no means justifiable; as the cases are not a few where the inflammatory action runs high, and well-marked specimens of bronchitis or peripneumonia appear; which, for want of active remedies in the beginning, may, and often do, terminate unfavourably, either owing to the exhaustion of the patient's strength by the lesion in the chest, or by secondary symptoms occurring in the brain or its membranes. In all cases however it is proper to abstract blood in the first instance, and this should be done if possible from a vein of the arm, or by cupping freely. By this plan of treatment, the disease may in most cases be cut short, in a manner the profession are perhaps not generally aware of. If a child is too young to admit of the use of the lancet, and cupping cannot be obtained, leeches must be applied to the chest, though this is according to the author's experience decidedly an inferior remedy, as they have such a peculiar influence in depressing the vital energy of the subject, without subduing in an equal degree the force of the circulation. They must however be resorted to, even in addition to the use of the lancet, where the mischief is considerable. The same symptoms sometimes present themselves as those described in the account of Bronchitis and Peripneumonia, and they require to be combated by the same kind of treatment. But we must occasionally, in accession to the use of antiphlogistics, have recourse to remedies which have a peculiar efficacy in relieving the spasm which forms so essential a part of this complaint. Hydrocyanic acid is one of these remedies, and may be advantageously administered in combination with the chlorate of potash in the form already pointed out in our treatment of croup. Emetics are very commonly used, and have a beneficial effect in relieving the stomach of a vast

quantity of swallowed mucus, at the same time that they produce diaphoresis, and by their effect on the general nervous system allay the local spasm of the bronchi and larger air-passages. When the acute inflammatory action has been entirely subdued, the tincture of lobelia inflata is a useful antispasmodic, but if administered too soon it increases the mischief.

After the acute part of the case is over, there is also another valuable remedy, viz. alum, which may be given to children of three or four years in doses of seven grains three times a day with great advantage. It has a powerful effect in checking the inordinate secretion from the mucous membrane, at the same time that it allays the spasm. A great number of palliatives are used with more or less benefit to the patient. But having within our reach the remedies already mentioned, we shall have little occasion to recur to others of inferior power; which may prolong the period of attendance on our patients, but cannot in any way tend to increase the practical efficacy of our curative efforts.

There is yet a disease of the air-passages occasionally met with in children which deserves a notice here. It is what has been termed CORYZA MALIGNA or MORBID SNUFFLES. The latter name is descriptive of the noise attending the respiration of an infant suffering from this malady. It occurs usually about the first or second week after birth, and sometimes the infant has seemed to be born with it. The discharge from the nostrils which constitutes the affection here alluded to, is of an uncommon character, quite distinct from that observable in ordinary colds, and purulent from the beginning, although it afterwards becomes sanious. During sleep the secretion, which is copious, arising from the whole extent of the mucous membrane lining the nasal fossæ, antrum Highmorianum, etc., gravitates towards the glottis, which it obstructs, thus producing difficult breathing, which is also the case when the infant sucks, and occasions violent coughing and much uneasiness. The cause of this morbid discharge undoubtedly is inflammation of a peculiar kind of the affected mucous membranes, which runs its course and commonly subsides in two or three weeks: but before the end of that time much general disorder has been produced, both by the local irritation, and the purulent matter carried into the alimentary canal. When nothing has been done to relieve it, the strength of the patient has frequently proved insufficient to cope with the disease. When the inflammation commences, the nostrils and surrounding parts are tumid, shining, and of a livid hue. At this period a cooling lotion may be applied externally with advantage; but the remedy spoken of as being of most importance by Underwood and Denman, who were among the first to direct attention to this disease, is frequently to relieve the primæ viæ by purgative medicines of their morbid and unnatural contents. As the patient is often quite unable to obtain a sufficient supply of food by suction, it should be fed with a spoon; and the mother's milk may be exhibited to it when necessary in this manner. When the discharge assumes a chronic character, infusion of cinchona or the sulphate of quinine should be administered, and this treatment has often been found to have an immediate effect in subduing it.

## OF SOME OF THE DISEASES OF THE NERVOUS SYSTEM.

Of the maladies under the present class of diseases, especially incident to children, the convulsions of early pregnancy present themselves as among the most important. Convulsions are, indeed, very frequent as well as important diseases of children. They occur during the earliest ages, and in various degrees of violence. In some cases, there is merely a degree of spasmodic affection of the lips, with clenching of the hands and turning in of the toes. These are followed by a temporary deliquium, in which the countenance is a little altered, and from which the child soon recovers. Mild forms of this kind of spasmodic affection are often by nurses called inward fits; whereas some authors have described those fits to be a slight spasmodic affection, in which the mouth during sleep is drawn into a smile, the eyelids in the mean time not being quite closed, and the eyes rolled upwards so as to discover the white, the breathing seeming occasionally to flutter, and the child to be easily startled. The milder forms of spasmodic affections are, in many cases, succeeded by unequivocal contractions of convulsions more completely developed. On such occasions the child may be observed to stretch out its body, and to extend rigidly its back. The face is seen void of colour, and the lips to be deeply livid or black; the eyes at the same time to be turned up, so as to give the appearance of death. In a few minutes the fit goes off, and the child recovers with a violent motion of its feet and hands. In some cases these convulsive affections of children resemble in no inconsiderable degree an epileptic paroxysm, the lips being livid, the eyes fixed, the pupils greatly dilated, accompanied by foaming at the mouth. These more violent fits are sometimes known to last from half an hour to an hour, and occasionally even for two hours. In these their worst forms, they often prove quickly fatal. In other cases, they come on more gradually, are preceded by the slighter symptoms called inward fits, and lapse, after many hours or days, into the more decided muscular contractions constituting ordinary convulsions. In regard to the frequency of recurrence of convulsions in children, subsequently to their being first instituted, there is a remarkable difference in different cases. In some, they return as often as every half-hour, while in others only once perhaps in four-and-twenty hours, or even in two or three days. In most cases, when the fit is gone off, the child cries violently, but gradually again recovers the full possession of its consciousness, and in some degree its previous cheerfulness; not however without being affected for some time afterward by a degree of languor and depression. It often happens, indeed, that a child, after having suffered repeated attacks of convulsions, will appear pale and sickly for many days or weeks, with its flesh soft and flabby. In other cases, a degree of stupor remains for an uncertain time after the convulsions are gone off.

Of the Proximate Cause.—In all cases of infantile convulsions, our prognosis should be very guarded; it being impossible to say whether the child

may recover or not, as one single fit may perchance carry it off; while at other times, after causing the greatest alarm, it may completely recover. The proximate cause of the malady is probably some morbid affection of the cerebral system, although we are not competent to speak positively as to its nature. One condition essential to it is doubtless an increased determination of blood to the head, or an undue expansion of what may be already there, by reason of an increment of its temperature. Over excitement of the heart and arteries is a state of the circulation which, experience proves, contributes towards that susceptibility which forms the predisposition to convulsive diseases of children.

Among the EXCITING CAUSES of convulsive diseases in children, may be enumerated all the following circumstances, and probably many others. The irritation attendant upon dentition, both directly from the pain of the gums, and also indirectly from the irritation occasioned by it to the intestinal canal, irritation in the alimentary tube from whatever cause, indigestion from unsuitable food productive of costiveness, flatulence, acidities, bilious or other acrimonies, etc. Sucking a nurse having her circulation in a state of excitement, or her mind in a state of agitation, irritation from the presence of worms in the intestines, suppression or diminution of accustomed evacuations, sudden retrocession of cutaneous eruptions, that peculiar state of the nervous system immediately preceding eruptive fevers of the exanthematic kind, and other acute diseases, residence in impure air, exposure to the influence of mechanical injuries.

The great general principle of treatment in the cure of infantile convulsions is the removal of the primary cause of the irritation. Emetics are to be administered to remove crudities of the stomach: but inasmuch as this treatment might not always be safe, lest the lower part of the intestines might be implicated by a state of costiveness, or the actual fact might not be sufficiently known to the practitioner. It might often therefore be safer practice to empty the lower bowels in the first instance by means of an active enema. For young infants ipecacuanha powder is the best, because the mildest emetic. A solution of common salt will, however, answer this indication sufficiently well in the absence of the other remedy. A solution of from three to five grains, according to the age of the child, of the sulphate of zinc, is also a safe and useful emetic. When a child is seized with a fit of convulsions, great alarm is naturally excited in the family, and it is expected, immediately on the arrival of the practitioner, that he will adopt some very prompt and decided measures. The first thing to be done is to order an enema and a warm-bath to be got ready. When these things are preparing, we inquire into the state of the gums and the other circumstances of the case. If found necessary, we lance the gums effectually. This being accomplished, we order the clyster to be administered without loss of time, and, for the sake of expedition, this may be made with warm water and common salt, with the addition of a little olive oil or common butter. Next, we put the child in a warm-bath

up to its chin. Here it should be observed that the bath should be delayed till after the bleeding, in the event of an overfulness of the vessels of the head, as in that case free bleeding should be the first measure to be adopted. The abstraction of blood from young infants is attended with some difficulty, the employment of leeches is often uncertain in its results, as the quantity obtained proves too little, and the efforts made to obtain it are found frequently to occupy too much time.

There are few medical gentlemen in general practice who can perform the operation of cupping with sufficient skill not to make that mode of abstraction of blood in urgent cases an objection to it. The opening of the jugular vein furnishes the most effectual outlet for the required evacuation, provided the medical attendant is willing to undertake it. The great object to be ensured is to take the required quantity of blood pretty promptly, which consequently will also speedily lay the foundation for a prompt removal of danger. The author wishes to observe that the application of one or two leeches to the temples, as is too commonly the practice with the profession in the treatment of the cases such as we are now considering, is really trifling with the greatest danger; and that if we are under the necessity of contenting ourselves with the employment of leeches, they should be applied in cases of infantile convulsions from over-fulness of the head, at least in the number of from six to eight at once. In their application they should also be crowded within a narrow disc as nearly as possible to the external temporal artery immediately anteriorly to the ear. After an adequate abstraction of blood shall have been accomplished, it will deserve consideration how far it might be safe and proper soon afterwards to exhibit a mild ipecacuanha emetic. If this measure be not approved of, or deemed safe or useful, we should proceed at once to the exhibition of purgatives; and in order to ensure an early relief of the bowels without incurring the risk of adding to the danger of existing irritation, it might be advisable to premise in the first instance an efficient dose of castor oil. But we should consider that we are treating a case which will speedily require the more energetic influence of ample and repeated doses of calomel. The author considers that there are some cases of obstinate convulsions even of the earliest months where the spasmodic constitution, so to call it, is so intense that we could not hope to preserve the lives of their subjects without a very abundant use of calomel; it being at the same time to be remembered, that calomel is among the mildest of remedies when administered to infants. We are usually in the habit of connecting a certain spasmodic affection of the larynx with dentition in very young children, and thence of recommending the thorough lancing of the gums as an indispensable duty. Dentition frequently exasperates the spasmodic affection in question; although this spasm may undoubtedly develop itself in its absence. Master D. was the subject of this symptom in an intense form in the seventh week after his birth. His older brother had died the victim of convulsions during the period of teething. The parents were naturally alarmed at the appearance

at so early an age of the constriction of the larynx, which they considered to have destroyed his brother. There certainly in the present case was no irritation from teething. The child, however, appeared for its age somewhat full and gross. Its mother had been persuaded by her friends partly to feed it with SPOON MEAT. When the author was first requested to see it, he found it in a partially torpid state and difficultly to be roused. He advised the abstraction of three ounces of blood by cupping from behind the ears, the exhibition of an emetic a few hours afterwards, and ordered a smart purgative of calomel and jalap for next morning, and placed it subsequently on the use of calomel in the dose of three grains every three hours for about three days continuously from that time. It should have been observed at the commencement of the case, that the child had sustained two regular paroxysms of convulsions before he was made the subject of treatment by the present reporter of its malady. This little patient recovered perfectly in the course of about a fortnight.

Convulsions, as we have already seen, are greatly dependent in early infancy upon states which practically we impute with great reason to various states of irritation; and hence it has often been considered good practice to subdue such irritation by the exhibition of opiates. Many of the soothing sirups which it is too common to administer to children, have opium accordingly for their basis. The administration of opium however to infants, is generally to be considered as a prejudicial practice, as that powerful narcotic has the very injurious tendency of constipating both the liver and intestines. Some authors have considered the use of opium in convulsions of infants, so injurious as to warrant the entire deprecation of it. But there are few rules without exceptions. The following case will be considered an apposite illustration of the employment of opium in a case of infantile convulsions. Master E. D. when about five months old was seized with rather an unusual variety of convulsions. His bowels had been in a state of extreme constipation for several days, which was not only not reported, but positively contradicted by his nurse. Calomel in the dose of about four grains was prescribed for it. The rectum being plugged up by hardened fæces, a struggle was instituted during the operation of the medicine, between the action of the calomel on the one hand and resistance to it on the part of the intestine; which probably would not have happened had the rectum been emptied in the first instance by means of an enema. During the disturbance in question, the child was thrown into convulsions. The variety of those convulsions was somewhat peculiar, inasmuch as they strongly simulated the convulsions of moribund animals under the influence of a galvanic battery, lasting only for a few seconds, leaving the child immediately afterwards in the fullest possession of its consciousness, and fully competent to anticipate with extreme terror the invasion of the next paroxysm. For several hours the fits were renewed about every six or eight minutes, producing great distress and alarm among the by-standers. At length finding no amendment from the assiduous bathings and frictions which had been pursued, and not knowing when

to expect much positive advantage from the use of the various aperient and other medicines which had been exhibited, the author determined to administer to his little patient five drops of laudanum. The storm was forthwith allayed; and the case in the progress of the treatment terminated most happily. It might be useful to remark that a plethoric child should always have some blood drawn before it would be safe to give it laudanum; and as a general rule it would be better to avoid the exhibition of opium, excepting in cases of severe griping or looseness, or some other extraordinary irritation. As a substitute however for the internal use of opium, the spine might perhaps with some advantage be treated by friction with opium and camphorated liniment. Dr. Underwood strongly recommended the use of the oil of rue as a stimulant embrocation for a similar purpose. The author can recollect when blisters were extensively applied to the head in cases of convulsions of children; and he can also well remember that the treatment of such cases by those means, was not nearly so successful as is now our treatment of the same cases by the use of cooling and even refrigerating fluids applied to the naked scalp, and by the use of the iced water bladder pillows already described in this volume, as usually employed by him with great advantage.

Epileptic convulsions of children of larger growth bear considerable analogy to those of early infancy already spoken of; although they are usually described as being more regular in their accessions, as presenting themselves in more marked paroxysms, as being more certainly preceded and succeeded by insensibility; by the symptom of foaming at the mouth; by great dilatation of the pupils; and by their seldom occurring until about the fourth year. Convulsions of this kind are to be treated generally on the principle of removing irritation; as in most cases they will be found upon inquiry to be the effect of causes of that kind. We inquire into the state of the chylopoietic organs, and if we discover any proof or cause of irritation there, we treat the case accordingly, first by an active emetic consisting of half a grain of tartarized antimony and from eight to twelve grains of powder of ipecacuanha; then with a full dose of calomel and jalap; and lastly, with repeated doses of calomel, to improve the secretions. If the irritation be from teeth irregularly cutting the gums at this period, free lancing should be resorted to. Convulsions sometimes are the results of decayed teeth. In such cases the stumps should be speedily and effectually removed. In strumous habits, convulsions are consequences occasionally of suppressed morbid discharges from sudden healing up of wounds, etc.

Those discharges might be beneficially re-established or others substituted; or if either of these be deemed objectionable, the patient should be made the subject of active purging from time to time, for many days or weeks. Convulsions considered as the effects of bad general management or regimen, are to be remedied by judicious diet, by active purgative medicines, and possibly in some cases by a temporary change of residence. If dependent upon a feeble or cachectic

state of the constitution in addition to the free use of mercurial remedies and purgatives, it may be useful to have recourse to the employment of tonics, such as bark, iron, vitriolated zinc, and sulphate of copper. The tepid bath may also be advantageously employed in the treatment of this form of convulsions. The author has no very high opinion of the substances usually called antispasmodics. Sea-bathing and marine residence, with a judicious regulation of the regimen and general management, may greatly contribute to establish the patient's recovery.

Of Hydrocephalus.—Hydrocephalus, as the term imports, consists in an effusion of serous fluid within the encephalon, and is the result of serous inflammation of the meninges of the brain. This effusion may be made either intermediately between the meninges and their general cerebral inclosure, or into the cavities of the brain called its ventricles. If of the former variety, it has been called hydrocephalus externus; if of the latter, hydrocephalus internus. An aqueo-serous discharge may be the result either immediately of a cephalic disease, or the ultimate effect only of an exhausted state of the whole system, as in general dropsy from exhaustion. The disease which the term hydrocephalus is employed usually to designate, is an affection more or less of an inflammatory character of the vessels of the brain and its meninges. But the term hydrocephalus embraces only the result of the morbid action in the same way as empyema expresses the result of acute inflammation of the thoracic viscera. Phrenitis hydropica might perhaps afford a better epithet to express both the morbid action and the tendency of this formidable complaint. Dr. Cullen has given it the designation of apoplexia hydrocephalica.

Hydrocephalus is one of the most dangerous and insidious diseases to which children are subject. It may come on at any period of the child's growth, from earliest infancy to the age of ten or twelve; and in town populations it is very apt to supervene during the earlier months of lactation, and on the onset and during the progress of the troubles of dentition.

It sometimes makes its attack suddenly in the form of an acute fever, at other times more gradually, when it may become protracted for many weeks or months. Hence pathologists have described hydrocephalus as consisting in two very distinct varieties, to which they have indeed applied the distinctive epithets of acute and chronic. Acute hydrocephalus usually begins like common fever, and is often preceded by lassitude and languor, denoting no little disturbance and irregularity in some of the most important operations of the system. At an early period, however, something of a determination to the head may be recognised by a closely observant eye, to be a prominent feature among the symptoms. Occasionally the conjunctiva of one or both eyes may be found to be more than usually injected. The first well-marked symptoms of the disease are, a general pain of the head, either of one or both sides of the head, a sense of weight in the head or about the nape of the neck. It must, however, be acknowledged that the progress of this complaint is often very insidious. There is for some

hours or days a general indisposition, a sense of uncomfortableness, a disposition to peevishness, a diminution or disturbance of the appetite, with occasional attacks of sickness or vomiting, the matter ejected being bilious. It may be often remarked, or ascertained upon inquiry, that the little patient will have been constipated for some time; especially subsequently to the commencement of his indisposition. At this time the child may be observed to sleep uneasily, to sleep with its eyelids imperfectly closed, the globes of the eyes occasionally rolling in different directions, and, during its imperfect sleep, to grind the teeth, and from time to time to startle in surprise or terror. Under these circumstances, it will often awaken suddenly and scream violently, as if under the influence of some great alarm. An indistinct febrile state denoted by languor of the eye, flushed face, pain of the head, thirst, heat of the skin, etc. forms towards evening; when the malady is fully established. In other cases, however, and those by no means infrequent, the attack is more sudden and with scarcely any previous indisposition.

In this form of the malady, its progress is more rapid, and its character is more actively acute: its subjects are also the most lively and apparently healthy children. The attack commences with a distinct rigor, or with alternate paroxysms of heat and cold. The child may then be seen to labour under symptoms of increased determination of blood to the head, and, if old enough, complains of a distressing headache, principally in most cases affecting the forehead, but occasionally one side of the head. In a certain proportion of cases, however, this symptom affects chiefly the lower portion of the occiput, or nape of the neck. The pain of the head is constant as well as severe, and the eyes, during the development of the disease, become extremely sensible in many cases to the impression of light upon them. During this stage of the malady, the pupils become much contracted, sometimes indeed very irregularly, indicating at once the irritability of the organ of vision, and the disturbance of its sentient and muscular powers. About this period, the young subject's condition is usually that of high fever, and a greatly excited state; the pulse beating with a quick, strong, sometimes a full and sometimes a hard and compressed stroke. Pressure still being made on the substance of the brain, the stomach becomes much disturbed, frequently rejecting its contents, and indisposed, at this period of the case, to receive any new supply. The tongue is white, like that of any other inflammatory fever. The bowels, if not excited by purgative medicines, are in most cases very torpid. In some rare instances, however, there is diarrhœa. In those cases, the stools are green and fetid. After the complete establishment of the disease, the body is ordinarily raised to an uniformly high temperature, so high indeed that the author has sometimes known it to have been elevated to 106 and 107 degrees of Fahrenheit.

After the above symptoms of an extremely acute fever shall have continued for several days, the second stage of the malady commences. This stage, however, supervenes sometimes sooner, sometimes later, in the progress of the complaint; most frequently about ten days from the commencement of the indis-

position. At this time the pulse, from before having been regular and not very greatly increased as to its frequency, becomes, in most cases, quick, hard, and irregular; but, in some other cases, preternaturally slow and intermittent. On the pulse becoming slow, the pupils are seen to acquire a progressive dilatation, and sooner or later a double vision is instituted, and farther in the progress of the malady more or less of strabismus. In some cases, at this period, there is a considerable insensibility to the action of light. During the second or third week of the disease the muscles of expression, especially those of the mouth, are occasionally thrown into whimsical and almost ludicrous movements. The author has only known two patients to recover after having become the subject of this symptom.

In the progress of the disease, the intensity of the headache is gradually diminished, or its character becomes less positive and regular. The violent throbbing pain becomes less constant, although at the same time the little patient appears to have occasional attacks of the severest torture from the pain in the head. At this stage of its malady the child expresses its affliction by loud outcries and dreadful screams. In proportion as this change of character of the disease advances the appetite becomes more voracious, and often thus remains unabated during the entire sequel of the case, even to within a short period of its termination. In some cases delirium supervenes early in the disease; in others the patient continues sensible and intelligent to the very last stage, or until the stupor makes it appearance. At length the symptoms of oppressed brain become more obvious and more urgent, the pulse becomes weaker but much more frequent; amounting in frequency to one hundred and sixty strokes in a minute, or even more. The strabismus, which was only occasional or moderate at an earlier period of the malady, becomes towards the conclusion a permanent and distressing symptom. At length vision is entirely lost, and sundry functional actions are abolished, so that the urine comes to be retained, or passed involuntarily, and the fæces to be voided without the control or consciousness of the patient. The retiring sensibility sinks into insensibility and coma, and the scene closes with stertorous breathing and convulsions. Convulsions, however, are not essentially an attribute of the last stage of hydrocephalus, as in some cases they have been known to usher in the malady, and in many others to have attended it in every stage of its progress. In some cases, again, we have convulsions only of one side, the other being either partially or entirely deprived of muscular power. Hence we occasionally meet with cases, in which the face is much distorted on one side, with one eye closed and the other open. Such are the principal symptoms of acute hydrocephalus.

The chronic form of hydrocephalus makes its attack with much less violence, and runs its course with less rapidity. In some cases it would appear to depend upon an original feebleness of constitution, the child exhibiting a character of languor and dulness from the birth. The head may be seen to enlarge much

faster than it ought to do; and in some cases, indeed, this undue growth of the head is known to begin in utero. At other times the child would seem to be tolerably well at first, or even for some years; but its general health is observed to be but delicate, its complexion destitute of the strengh of colour and floridness which indicate a perfect state of the functions, and the flesh destitute of firmness. With this predisposition the functions of the stomach may be observed to be subject to considerable irregularities, and the abdomen to be distended by swellings of the mesenteric glands. The appetite is sometimes almost greedy, although at other times very weak and squeamish. A child subject to this predisposition and constitution has dislikes for some particular foods, of which other children are sufficiently fond; or it may occasionally refuse what it is himself generally fond of. At other times food easily digested by the generality of children, and usually by the subject of chronic hydrocephalus, is suddenly and unexpectedly rejected by vomiting. In short, the whole of the chylopoietic system is liable in children of this temperament to frequent disturbances and irregularities.

It is, indeed, difficult to say whether this form of hydrocephalus is most to be attributed to morbid functions of the head in the first instance, or to irritations and irregularities of the chylopoietic viscera. It is generally very obvious that the process of digestion is but very imperfectly performed. The first obvious symptom of the disease is an unusual dulness of the eye, and of the expression of the entire countenance. A degree of feverishness may be observed to come on towards evening, and the child, if old enough, will from time to time complain of headache, accompanied by considerable fretfulness of temper. This headache will often exhibit itself in paroxysms of great violence; or is constant, but less acute and distressing. The latter form is for the most part attended with anorexia, and the former by attacks of sickness and vomiting. The animal powers of the little patient recovering something of strength, he may show a disposition occasionally to attend to the winning attentions of his nurse to entertain him; or, if older, to amuse himself with his playthings. He soon however finds himself fatigued by personal exertion, or even by the exercise simply of his faculty of attention; the effort of looking on being more than his diminished powers are equal to keep up.

The headache becomes gradually more constant and severe, accompanied pretty obviously, when it cannot be expressed in words, by giddiness and confusion of vision. In this, as in the acute form of hydrocephalus, the painful affection of the head appears to have its principal seat in the forehead, although, in many cases, at the occiput, and even at the nape of the neck. The temperature of the body is but little raised in this variety of the malady in the first instance; but, as the disease advances, the skin becomes hot, and the pulse becomes more or less excited, and unequal both as to strength and frequency. In some cases, the action of the arteries becomes very slow at an early period of the complaint, but this forms not its general rule. The bowels are usually

constipated on the accession of the malady, and for the most part continue so during the whole of its progress. In some cases, the urine is voided with considerable difficulty, in small quantities, and not without pain. The above symptoms may continue for many weeks without indicating the actual existence of pressure on the brain, and some combinations of them may exist for months, without indicating a state of immediate danger. In the meantime, the child evidently loses its flesh, becomes more and more depressed in spirits, becomes more sickly and irregular in its appetite, more fretful and unmanageable in its temper, and subject to a more obvious and considerable accession of fever in the evening. From this state the patient may appear sometimes in a great measure to recover, although the bulk of his head, the general feebleness of his functions, and the unchanged delicacy of his frame, must afford very strong presumptive proofs, that water is actually being effused upon his brain. In general, however, in a few weeks, or at most in a few months, the symptoms of compressed brain become more distinct. The pupils are dilated, the patient begins to squint, the limbs become paralyzed and convulsed, and the urine is suppressed, requiring the use of the catheter, or the power of retention becomes perfectly abolished. The pulse is at first slow and full, but gradually becomes weaker in the progress of the disease, fluttering, and irregular. Stertorous breathing and coma advance in the sequel, and the patient is carried off in convulsions. The size which the head may acquire during the development of this disease is very uncertain, as it will generally go on increasing in magnitude as long as the subject of the case shall survive. The author recollects to have seen one case in which the head had attained the bulk, as was stated by the spectators of the malady, of four ordinary adult heads. Its subject was, at the time he saw it last, about six years old.

Of the Treatment.—The preceding history of hydrocephalus has been in a great measure drawn up without constant reference to its best treatment, inasmuch as its materials have been collected from what the author has observed of its ordinary treatment and results in general practice, for the last thirty years. The reader, however, must not suppose that hydrocephalus is so essentially fatal in its nature as might be inferred from various statements made in the course of the above description. The cure of hydrocephalus must proceed upon the general plan that the disease is inflammatory, and, like other inflammatory affections, is often to be subdued by energetic antiphlogistic measures. Our practice must, indeed, be very decided as soon as the disease is sufficiently developed to exhibit even a positive predisposition to hydrocephalus. We must not think of trifling at the beginning. By a bold use of proper remedies at that time, when congestion is only threatened, we may prevent the establishment of the malady. When there is pain of the head, even partial sensibility to the action of light, or the smallest amount of stupor, we should immediately have recourse to abstraction of blood on an efficient scale, such as might be warranted by the age of the child, and the early period of the disease.

If under the age of six months, probably in that case the result of painful dentition, the temperature of the head having already received positive augmentation, the least quantity of blood to be abstracted should be four ounces, either by cupping from the temples; or from the jugular vein by careful incision with a lancet. If the child be of a full habit and the head greatly oppressed, it might be safe to take away an additional ounce or two. It would be most satisfactory to bleed by cupping, if it could be effected so as to produce deliquium. If the child be upwards of two years old, it would well bear the loss of from six to about eight ounces of blood. But here also it is to be understood that this evacuation is to be adopted at the very commencement of the disease. In children of a still more advanced age and at the commencement of the malady, as in the preceding cases, the operation of bleeding must be made available on a proportionally active scale; this scale indeed to be adapted to the attainment of an unequivocal deliquium animi.

As soon as the patient shall have sufficiently recovered after the bleeding, an emetic should be forthwith exhibited with powder of ipecacuanha simply to very young infants, and with the addition of tartarized antimony to children of larger growth. When the child shall have recovered after the action of the emetic, it should be treated as speedily as may be with a strong purge of calomel and jalap. These several measures having been employed, the practitioner will have to ascertain how far the bleeding and the other evacuations will have had the effect of reducing the increased temperature of the head. Should any part of the head be found still of higher temperature than natural, it will be proper immediately to give the requisite instructions for reducing it, by the application of cold lotions and the iced pillow, so often described in our preceding articles. The next measure to be pursued, and that must not be long delayed, should be to exhibit calomel in frequent and ample doses until the liver shall be well purged.

The circulation at the commencement of this complaint is very apt to be found unequal as affecting the head and the lower extremities. The practitioner, therefore, whilst the temperature of the head is to be subdued, should not neglect to cause the cold lower extremities to be artificially heated by the application to them of a heated brick, or a bottle of hot water wrapped up in a blanketting of fine flannel. If the above measures are adopted at the very commencement of acute hydrocephalus, the author ventures to assert, upon the evidence of his own personal experience, that the disease will FREQUENTLY be subdued in the course of the first few hours. If, on the contrary, they should be delayed for the first two days subsequently to the invasion of the malady, they will often fail in their effect, but nevertheless their early adoption will afford the patient a remote chance of recovery. Some authors of reputation have recommended the use of digitalis in combination with calomel as a remedy in acute hydrocephalus. If we suppose the first stage to be treated with

adequate vigour, in the manner already recommended, no opportunity will be left for the exhibition of digitalis; as the case will for the most part already have been placed in a state of security. Subsequently to the treatment by sufficient depletion proving unsuccessful, the administration of digitalis could not be expected to do much good until it had been given in a sufficient charge to affect the frequency of the pulse; and by the time such a quantity could be exhibited, the author fears that too much might be required to be perfectly compatible with the safety of its exhibition to young infants. Having accordingly seldom ventured to push its use to the attainment of its undoubted effects on the circulation in very young subjects, he cannot venture to speak with more precision as to its power than Dr. Burns has done in its recommendation. Of this, the simple reason is, that he has never pushed it to its full extent in the treatment of infantile diseases. The fine balancing of an infant's circulation makes it easily extinguishable by strong poisons. In a case of hydrocephalus become chronic by simple duration of the disease without being adequately subdued by the treatment now recommended, the author knows no other mode of treating it with any prospect of ultimate success than by keeping it with perfect determination of purpose under the continuous influence of pretty full doses of calomel, or of blue ointment very freely administered by friction. Although the prospect of recovery under these circumstances is not to be considered as possessing much value, nevertheless the practice recommended affords the best chance, and it occasionally happens, after many balancings of the hopes and the fears of the case, to be at last crowned with success.

### OF SOME PRINCIPAL CUTANEOUS DISEASES OF CHILDREN.

Some of the diseases of which we have to treat under this head are peculiar to the period of infancy, as their causes are found among those circumstances which occur only at that stage of life; while others are simply modified forms of affections to which persons of every age are subject. Several of the maladies that are ranged in the same division with those which are strictly cutaneous, ought more properly to be considered as constitutional affections; the external manifestations being to be regarded only as accompaniments or symptoms of the disease itself. As however this distinction is not generally made by writers on these subjects, the author believes it more advisable, for the sake of convenience, to continue to place these several very distinct affections in their usual anomalous juxta-position.

Of Infantile Erysipelas.—The variety of erysipelas which occurs in early infancy is of a gangrenous type, always highly dangerous even in sporadic cases, often infectious, and when so, generally fatal. Lying-in hospitals and closely crowded situations are for the most part the localities in which it is found

to prevail. It generally makes its appearance a few days after birth, and most frequently commences about the umbilicus, especially if there be any mismanagement or accidental soreness at the part of insertion of the cord. The pudenda of female infants are also often a centre from which the inflammation originates, in consequence of acrimonious vaginal discharges, depending upon or complicated with great constitutional debility; and occasionally instances are met with in which the disease is present at birth. It rapidly spreads over the abdomen, thighs, legs, and perineum; these parts become œdematous, dark-coloured, and vesicated; while the extremities not uncommonly sphacelate. A general fever of the lowest tone usually attends these local affections; and the child soon becomes comatose; in which state it continues until it dies. In treating this complaint, our endeavours must principally be directed to the constitutional feebleness; and reliance is almost solely to be placed on the use of quinine in any form or manner in which it can be employed, while, in the first stage of the disease, stimulant applications may be advantageously used locally to the parts.

Of Induration of the Subcutaneous Cellular Tissue of early infancy.—Cellular tissue is at all times more prone than other tissues to fall into a state of disease; and induration is one of the most common forms in which this liability presents itself in early infancy. In children soon after birth a peculiar variety of this induration is sometimes witnessed, which, as it depends upon an effusion of albuminous lymph, is called the œdema of new-born children, to distinguish it from the common œdema of adults. In popular language, children affected by this complaint are said to be skin-bound. The usual time of its appearance is just after birth; but it sometimes does not come on until two or three days shall have elapsed; while in other examples, infants have been born with the disease present upon them. The subjects of this disease are always weak and puny, often observed to have been born prematurely, and to have a peculiar complaining sort of cry, not a little pathognomonic of their peculiar state. The temperature of the skin sinks as the œdema proceeds, and the surface becomes dry and fissured. The feet are usually first attacked, and from them the swelling extends upwards with rapidity, involving the abdomen, back, face, and hands. It sometimes occurs simultaneously in all these parts, and is scarcely ever confined to the extremities. The limbs increase; but the change of bulk is not in proportion to the change of consistence of the tissues. Parts naturally soft and yielding feel firm and hard, and the healthy colour of the skin is turned to a dark red or purple. On pressing the surface, it sinks and shows a dingy-yellow tinge, which however soon gives way to the morbidly red colour of the disease. The application of heat acts exactly in the same manner as if the part affected were destitute of the living principle. Respiration gradually grows more feeble, the face assumes a purple hue, all the symptoms of suffocation arise, and death takes place by asphyxia

in the course of about ten days or a fortnight, and occasionally, but not frequently, to a later period.

The character of this œdema cannot be mistaken when it is so diffused as it usually becomes; and if circumscribed in its extent, it may easily be distinguished from common inflammation by the diminished temperature of the part. The body retains after death all the peculiar external appearance which characterized the disease during life; but the firmness is perhaps somewhat increased. Instead however of the cellular tissue being compact and solid, as the name of the disease would seem to imply, its meshes are found to be filled with a serous or albuminous fluid, either limpid or tinged with blood. When pressed, all the fluid oozes out, and the tissue remains soft and flaccid; and the skin, which before was hard and tense, now rolls under the finger. No very manifest change is perceptible in the appearance of the cellular tissue; although it may possibly be a little more vascular than natural. Such being the actual condition of the diseased tissue, the first observers of the malady would never have applied to it so inappropriate a term as induration, if they had properly examined the bodies of their patients; for the assertion of Dr. Denman that he had seen the cellular tissue in this disease hard and dry, must have originated in some mistake. Some pathologists, not satisfied with this simple explanation of the morbid phenomena, have supposed the effused fluid to possess the property of becoming concrete; and have proposed on this ground, to draw a distinction between this disease and the œdema of adults. The experiments which were made to support their hypothesis were however not correct; for in all cases of œdema produced by impeded circulation, the fluid which is poured out has in some degree this very property of coagulating when exposed to air and left at rest; and in proportion to the suddenness of the effusion, is the disposition to coagulation augmented. But the coagulation of these fluids never takes place in the cellular tissue itself. There are other morbid appearances observed, some of which are essential to the disease, while others are merely coincidences. The most remarkable of these, is the state of venous congestion everywhere distinctly seen. The lungs, liver, and all soft parts, are apparently gorged with blood, without any mechanical obstacle impeding the circulation through them, so that the appearances are more like those of plethora than of any other condition. The cellular tissue of all the viscera and internal organs, and the submucous cellular tissue, are affected in a similar manner and in a degree corresponding; while serum is poured out into the serous cavities. The cause of this disease is said by some to be acute inflammation of the lungs, or of some of the viscera; others however have attributed it to imperfect occlusion of the foramen ovale. But neither of these conditions is at all essential to the disease; since it is often seen where the formation of the heart is perfectly natural, and where no traces of inflammatory action are discoverable in any part of the body; the state of general congestion being all that can be ascertained to be morbidly wrong. Cold has also been mentioned among the exciting causes: but it is remarked that the disease occurs equally

in hot as in cold weather. Inflammation of the mucous membranes is another reputed cause of this disease. But if it were so, indications of its presence would more uniformly be detected: whereas the rarity of its occurrence would rather lead us to regard it as a mere coincidence. Some pathologists again have advanced the notion of a state of congenital plethora being the cause of all the phenomena which present themselves as constituents of this malady; and have supposed the disease to arise from the regurgitation of this surplus blood, in consequence of some obstruction to the course of the circulation.

Very little can be said as to the indications of the treatment of the complaint from what we know of its morbid anatomy. General bleeding has been proposed. But the appearance of great feebleness of the little patients the subjects of this disease has usually led to so early a conviction of their inability to bear the loss of blood, that the employment of dry heat and dry friction has been resorted to as likely to answer a better purpose; which, however, has been assumed more from theory than from any good evidence derived from experience of their utility. This disease is very rarely met with in private life. It has, however, been frequently seen in the Parisian hospitals, where the air is often unsalubrious, and where epidemic diseases take on very severe forms. It has occasionally visited one or two of the lying-in hospitals of London.

Of Jaundice.—The diffusion of a yellow tinge over the surface of the body of new-born infants is so common an occurrence, that almost every child becomes the subject of it within the first week after its birth. It is the mildest form in which jaundice ever appears, and indeed scarcely requires to be spoken of as a disease. The only symptoms which, in ordinary cases, may be noticed in connexion with the discoloration of the skin, are a slight degree of drowsiness and languor. Its cause is confidently asserted by some writers to be absorption of the meconium; but it more probably originates in some obstruction to the free escape of the bile from the ducts and gall-bladder; and this, in almost every instance, appears to depend upon the presence of a large quantity of meconium of a viscid nature adhering to the mucous membrane of the intestines, and clogging up the orifice of the ductus communis choledochus. The treatment, whenever any interference is necessary, simply consists in the administration of a mild aperient; or, if that alone should not suffice, an emetic may be afterwards exhibited with much advantage.

Of Venereal Eruptions and Affections of the Skin.—Children when in utero are sometimes brought under the influence of syphilitic infection; and premature labour, with the death of the fœtus, is generally the result. More commonly, however, the child at birth has no external marks of the disease, and may be well grown and apparently healthy; or, as now and then happens, the case may present the character of great feebleness and marasmus, exhibiting very strikingly the similitude of a wrinkled old man in miniature. In the course

however of about a fortnight subsequently, traces of the presence of the venereal poison in the system begin to show themselves, and copper-coloured eruptions come out in the neighbourhood of the genitals and nates, or else about the mouth. Dr. Bateman states, that syphilitic affections of the skin usually make their first appearance on the face, where they are often copious, and on the hands or wrists. The disease having once thus manifested itself, goes on increasing in the severity and extent of its symptoms, unless its progress be checked by the judicious use of mercury: and in children whose constitutions are not wholly undermined by it, we may generally calculate upon its eradication by the regular exhibition of half a grain of calomel three times a day, until the system shall be fully brought under the influence of the remedy, or its effects shall be made apparent by a slight approach to soreness of the mouth and gums. This dose of calomel will be found to act upon the majority of children without passing off by the bowels, even when unprotected by opium. At the same time that we are pursuing these remedial measures with the child, it must be ascertained, if possible, where may be the source of the contagion; so that we may be enabled to take all the necessary precautions to prevent any impediment to the cure of the disease which might result from continued communication with it. If the mother or nurse be the infecting party, it will be of importance to place her at once under a course of mercurial medicine; a plan which is adopted by some when the mother is suckling, as the best method of administering the remedy to the child. If the nurse be healthy, there will be considerable danger of her receiving the venereal poison from the diseased infant: for as soon as the child's mouth becomes affected by the disease, the nipples are also almost sure to become sore and ulcerated. To obviate this evil in cases where there is risk of conveying the contagion from the child to the nurse, the system of the latter ought to be protected by mercury, and the nipples kept from direct contact with the child's mouth by the use of the shield. As a measure of safety, this latter precaution is of great importance, and should never be omitted.

Of Crusta Lactea or Milk Blotch.—This disease consists of a pustular eruption, which principally spreads over the face, unaccompanied by much constitutional disturbance, almost exclusively peculiar to the age of infancy, and prevailing chiefly during the period of lactation. It usually commences about the forehead or cheeks by the eruption of a cluster of whitish pustules, with red and inflamed bases. As these pustules maturate and the discharge escapes, the several distinct pustules are uniformly covered over with thick and yellow scabs. In very severe cases, which however are seldom seen, the eruption sometimes extends over the chin and neck; and then, from the excessive local irritation and the profuse discharge, the general health suffers detriment, the appetite is impaired, mesenteric disease supervenes, and the child dies with all the usual symptoms of that affection.

The urine of children who have this eruption upon them is said to emit a

smell similar to that of cats; but this assertion is not true in reference to the disease generally; since, in the particular cases in which the odour was recognised, the viola tricolor had been administered as a specific; and, we have the evidence of Dr. A. T. Thomson, that that plant possesses the peculiar property of impregnating the urine of those who take it with the odour in question. The cause of this disease is evidently a plethoric condition of the body; and the eruption is sometimes excited by the use of improper diet, or by indulgence in unwholesome fruits. It is also in some cases an accompaniment of dentition. There is likewise undoubtedly in most of the children who suffer from this complaint, an hereditary predisposition to it; so that if it be known to have attacked either the father, mother, or elder children, it may almost with certainty be anticipated in those that are to succeed. The eruption may generally be lessened, and the irritation attending it moderated, by lowering the diet both of mother and child, and by giving the child aperient and alterative medicines. Local applications have been recommended by some as a sure means of removing the complaint; and the sulphate of zinc has been much extolled, both as a lotion and as an internal tonic. Corrosive sublimate has also been said to have a healing tendency; but the truth is, that the eruption is seldom much dispersed until the child begins to run about, and to take more active exercise than simple nursing affords. In extreme cases bleeding has been resorted to.

Of Scaldhead.—Ringworm, or the Porrigo Scutulata of Bateman, is scarcely to be called an infantile disease, as the more usual time of its appearance is about the age of four or five years. It however sometimes is seen in very early infancy; and accordingly the author notices it, not so much for the purpose of entering upon its pathological history and description, as of recording his testimony to the efficacy of the plan of treating it by frequently shaving the head, and very freely applying dilute nitrate of silver to the parts where the morbid action is going on, let the eruption be in what condition it may. The proportion of about ten grains of nitrate of silver to an ounce of distilled water will generally answer our purpose very well.

Of Impetigo.—This disease belongs to the same class of pustular affections of the skin as the last, and generally presents an extensive, hot, and fiery eruption. The pustules are numerous and of a dark red or blue appearance, and are attended by an intolerable itching and great constitutional disturbance. A predisposition to the disease seems to exist in children of a quick and sanguineous temperament, who are easily excited, and in whom accidental irritation is productive of considerable vascular derangement. Hence the eruption is very frequently brought on by the process of teething, and sometimes continues until after the second dentition is completed, and even to the period of puberty. In young children, a very common seat of the eruption is about the flexures of the joints;

but it also is not seldom scattered over the whole body; and when that is the case, the disease proves exceedingly obstinate, and the irritation is so intense as to prevent rest and to undermine the general health. Every now and then the eruption is met with in the same situations as the common itch, and excites very unnecessarily alarm and anxiety. Impetigo has not so much the character of an hereditary disease as the milk-blotch, or crusta lactea.

The treatment requires the employment both of local and constitutional remedies. Mercurials and active purgatives must be internally administered, and the child and its nurse placed upon low diet. Cooling lotions and applications are sometimes useful in allaying the irritability of the eruption; but the most efficacious topical remedies are the sulphur ointment, or the common cerate slightly impregnated with red precipitate. Dilute sulphuric acid, in the proportion of twenty or thirty drops to an ounce of cerate, is also a very good application. Bathing the child in lime-water sometimes proves serviceable; and the black-wash and a solution of superacetate of lead have, in some instances, been found of great utility. General bleeding is, in almost all cases, an indispensable preparative for the trial of other measures. Even in cases which resist all plans of treatment, the disease generally wears itself out, if due attention be paid to cleanliness, exercise, and regimen.

Of Strophulus.—This is essentially a disease of early infancy. In the nosology of cutaneous diseases by Willan and Bateman, several species are enumerated, and their distinctive characters attempted to be pointed out. So little practical use, however, is there in these minute niceties of description, that, in the present account of this affection, the author proposes simply to refer to the several peculiarities of appearance which the eruption assumes in different subjects, and sometimes indeed in the same individual, in one continuous statement. The eruption is papular, and principally confines itself to the face, neck, and arms; in some few cases, however, where the exciting causes are long-continued and active, and the predisposition strong, it becomes general over the whole body. The papulæ which break out upon the skin of very young infants are usually of a bright-red colour, seen in clusters, and surrounded by diffused redness of the skin. At a more advanced age, they are often less inflamed in their appearance, whiter, harder, and occasionally have an erratic disposition, or a tendency to spread very extensively over the surface of the body. During the month a copious eruption of the more inflammatory appearance very frequently breaks out upon the cheeks and arms of healthy and robust children, who are too well supplied with milk, or suckled by a female whose milk is of bad quality, or in whom there is any accidental acidity of the stomach or primæ viæ. In such cases the eruption is not of a nature to excite any uneasiness, as by attending to the indications of treatment so clearly derived from the circumstances of the case, such as correcting the acidity of the stomach by the ordinary remedies, lowering the diet both of the child and its nurse, and enjoining more free

exercise in the open air, all the unpleasant symptoms will quickly vanish. Care, however, must be observed, that the infant is not too much exposed to cold, or made to experience sudden vicissitudes of temperature; since, if the eruption be repelled, a circumstance which negligence in these matters may very probably occasion, more serious constitutional effects might be apprehended than would ever arise in the natural progress of the complaint. In the event of such an accident, the course to be pursued for the restoration of the eruption, would be to place the child in a warm-bath, and to administer some slightly cordial or stimulant medicine. When recession of the eruption does happen, the child generally suffers from diarrhœa, sickness, or convulsions; and a smart attack of thrush has also in some cases been the consequence. On the return of the cutaneous affection, all the constitutional illness commonly ceases. As a prophylactic measure against any untoward striking in of the eruption, the nurse should be directed to attend to the ablution of the child; which ought indeed, in order to promote an equable perspiration over every part of the surface, to be kept perfectly clean by washing it daily with tepid water. In treating the ordinary forms of the disease, we must be cautious not to employ very active purgatives; as the eruption has been driven inwards by such means. It will sometimes be found necessary in obstinate cases to change the nurse, especially if the milk shall have been uninterruptedly flowing for several months. An eruption that had resisted all the usual measures adopted for its relief has been known to cease immediately upon the adoption of such a change. At the period of dentition, children especially of delicate skin and irritable habit are also very liable to a recurrence of this eruption, in consequence of the sympathy which the integuments of the face in particular have with the contiguous and continuous mucous membrane lining the mouth and gums; where the irritation produced by the new process is generally very intense in such subjects. An obvious mode of speedy relief under these circumstances, is a deep, extensive, and, when necessary, crucial incision of the gums over the projecting teeth. When this salutary and truly indispensable step has been overlooked, the eruption has been known to become dispersed over the surface of the whole body and extremities. This is perhaps the severest form in which this affection ever shows itself, and is noticed by Dr. Willan under the name of strophulus confertus.

Of Scurfiness of the Head, or Dandriff.—This affection, which is the Ptyriasis of authors, is one to which many children, and especially those of uncleanly parents, are subject at a very early age. It simply consists of the separation of a succession of branny scales of a small size from the forehead and scalp, and is unproductive of any general symptoms worthy of remark. If unattended to, however, these scales are apt to accumulate, and at length prove a source of considerable irritation, giving rise to the eruption of a crop of pustules. All that is necessary in managing this affection is to observe the strictest clean-

liness, shaving off the hair, brushing and well washing the scalp with soap and water. A similar condition of the skin of the head is very frequently seen in bald and elderly persons.

Of Vaccinia. Cow-pox.—This is an affection by no means peculiar to infants, nor indeed to man at any period of his life. It is one of those diseases which have been accidentally grafted upon the human species from an inferior animal; but, unlike some others, derived from similar sources, has secured to it unexpected benefits, instead of introducing new modes of suffering and death. Its real origin is still involved in somewhat of obscurity: some authors asserting in common with Dr. Jenner, its identity with the disease called the grease in horses; others maintaining it to be a modified form of small-pox; while a third class contend that it is peculiar to the cow, from which animal it was first transferred to man. Whatever may be the truth as to these matters, the question is but of secondary importance; and to enter now upon its discussion would be a frivolous expenditure of the author's present very limited space. The history of the casual communication of the disease to man, of the first popular notice of the fact, of the discovery of its protective powers by the milking graziers, of the local circulation of this traditionary knowledge, its contact with the ingenious and penetrating mind of Jenner, the enthusiasm which it kindled in his breast, the industry he displayed in examining its truth, the tardy and modest announcement of the valuable result of his labours, the unwilling belief which was accorded to him, the prejudices and slander of his ignorant calumniators, and the final triumph over all the difficulties of envious misrepresentation and malicious opposition, all this clearly proved and well authenticated, presents to the mind of the scientific inquirer a most inspiring and consolatory theme of reflection, while it inflicts upon ignorant scepticism one of the severest rebukes to which such unworthy obstinacy was ever exposed. The peculiarities of this disease were first noticed in Dorsetshire among the milkers of dairy farms, who were found to be made exempt from the influence of the contagion of small-pox, by having been previously subjected to that of a pustular disease which they contracted from similar ulcers affecting the udders of their cows. A notion of this kind was very general throughout the dairy counties of the West of England before the time of Jenner's investigations; and indeed his attention was first drawn to the subject whilst an apprentice at Sudbury, by overhearing a country-woman say in his master's surgery, that "she could never take the small-pox for she had had the cow-pox." His curiosity was thus accidentally aroused; and from that time he commenced the collection of information respecting the disease. Whilst subsequently practising at his native place, Berkeley, in Gloucestershire, he in vain made several attempts to obtain the co-operation of his medical friends to carry on the necessary inquiries. At length, in the year 1796, without any assistance and in the face of ridicule, he made his first experiment in inoculation, in order to prove the correctness of a notion which he had long cherished,

that the disease would afford equal preservation from small-pox, whether received from the cow, or subsequently conveyed indirectly by transmission from one human subject to another. The trial succeeded, and Jenner in this way demonstrated the fact that security against the small-pox could be ensured at pleasure.

He prosecuted these investigations for two years, and in 1798 communicated to the public an account of his discoveries. Amidst much ill-treatment and abuse excited by this proceeding, he had the satisfaction of obtaining the support of most of the more eminent in the profession; and of meeting with the approving notice of the Royal Family, by whom he was aided and encouraged in his endeavours to extend the benefits of vaccination, not only in this country but over every part of the world. In consequence of his exertions, now equal in importance and extent to any thing that his most sanguine hopes could have pictured, their continued good effects are universally acknowledged.

Various attempts have since been made to detract from the merit of Dr. Jenner. By some it has been said that the practice of vaccination is of ancient date among the Hindoos; and that its preservative powers were well known to that people. But the authority of the modern Hindoo writers is to be considered as always more or less disputable; and the numerous instances of their fraudulent deception and arrogant assumption of unfounded claims which have become known to us, lead to a just suspicion of the validity of their testimony in the present instance. With equal confidence we feel ourselves authorized to repel the invidious insinuation made by Dr. Husson, the writer of the article Vaccine in the Dictionnaire des Sciences Médicales, an early friend of Dr. Jenner, who, with discreditable inconsistency, raised a claim to the French origin of the practice of vaccination. This person goes so far as to pretend to point out the course by which information of the nature and object of vaccination was transmitted from one individual to another, commencing with a Monsieur Rabaut, a Protestant clergyman at Montpellier, until it was disclosed to Jenner, to whom he is consequently unwilling to allow any of the merits of original discovery or priority of adoption. The bold impudence of this attack, made in the year 1821, upon a hitherto accredited historical fact, and one from which no other French author had withheld his assent, requires indeed no more considerate treatment than that of unqualified denial of its truth.

In the cow, the disease exists in the form of a vesicular eruption on the udder and teats, PRINCIPALLY during the spring and autumn months. These vesicles are at first of a pale blue or livid colour, with a depression in their centre, and are surrounded with an erysipelatous inflammation. They contain a transparent watery fluid, and the parts in their immediate vicinity become hard and inflamed. If care is not taken to prevent them from being rubbed, they burst, and give rise to a foul deep-eating ulcer, which is obstinate and troublesome to heal. Sometimes the cow appears to be sick, and yields less milk than usual; but this is not a frequent occurrence. By contact with the diseased parts,

vesicles of a similar character are produced upon the hands of those who milk the cows, if there happen to be about them any cuts or abrasions which will admit of the absorption of the matter of the sores. Most frequently the vesicles arise about the joints or extremities of the fingers. Febrile symptoms precede and accompany the course of these vesicles, and are sometimes found to become of no inconsiderable violence. These, however, are generally mitigated about the seventh or eighth day, when the vesicles have arrived at their perfect state, and are beginning to subside, unless indeed they have degenerated into ill-conditioned sores, and secondary symptoms of glandular affections have come on in the course of the absorbents and in the axilla. It also occasionally happens that from the very contagious nature of the matter secreted by the ulcerated surfaces, new vesicles are excited on all those parts of the body to which any of it may be casually conveyed, and thus the constitutional irritation is so prolonged as somewhat to affect the general health.

Of Inoculated Cow-Pox.—When artificially introduced into the system in the ordinary way of vaccination, by the application of a small portion of the limpid fluid contained in the vesicle at an early period after its formation, to a slight and superficial incision in the skin, the disease presents none of those local and constitutional severities which have been noticed as frequently developing themselves in cases which originate in the natural manner. On the third day after the incision and application of the virus, a spot of inflammation shows itself, which, if minutely examined on the fourth or fifth day, is seen to have for the centre from which it spreads a small, semitransparent, pearl-coloured vesicle with a circular, hard, and somewhat elevated base. The vesicle is seldom otherwise than circular in its form, having a well-defined margin, with a central depression, the circumference being tense and shining. The interior of the vesicle is composed of a number of little cells communicating together, and filled with a clear and colourless lymph. On the eighth or ninth day after the insertion of the virus, an inflamed halo or areola extends equally in every direction round the vesicle for the space of about an inch or an inch and a half; the cellular tissue beneath the skin being only in some slight measure inflamed, so as to render the part hard and tumefied. On the tenth and eleventh days this areola beginning to subside, the fluid in the vesicle concretes, and a brownish scab is formed, which is not in general detached for ten or twelve days more. Some slight febrile symptoms usually make their appearance during the formation of the vesicle; but they rarely amount to such a degree of importance as to require the interference of the practitioner; some mildly aperient or saline medicine being quite sufficient to afford the necessary relief. The routine practice adopted by some medical men of administering a course of medicine throughout the progress of the affection, partly perhaps in compliance with the prejudices of many parents, is altogether superfluous, if not absolutely injurious. There are in some instances deviations in the ap-

pearance and progress of the vesicle, from what has been described as usually occurring after skilful and judicious vaccination. In all such cases, however, no reliance can be placed on the degree of security presumed to have been attained against the accession of small-pox, and the operation requires repetition. Sometimes a large pustule rises up, charged with a thick, creamy, tenacious matter; sometimes irregular vesicles are produced, differing in most of their characteristics from the true vaccine pustule; and occasionally mere ulcerations supply the place of vesicles. All other different forms of eruption are manifestly spurious and of no avail. For the purposes of vaccination, lymph should be taken from a perfect vesicle before the seventh, or at latest the eighth day, and inserted without delay into a very superficial scarification; so that its infecting powers may not be decreased by dilution with too great a flow of blood. In order also to facilitate the due reception of the disease into the system, the age and healthiness of the subject should be regarded.

Experience has demonstrated, that no age is so favourable for the complete success of the operation as the first four months of life. The habit then seems to be brought more fully within the reach of the impression to be made by the disease; so that its protective influence is more certain and permanent, than when its communication has been deferred to a later period of life. In accordance also with what is well known with regard to the usual eruptive diseases of infancy, the constitutional effects are altogether insignificant. One of the most usual sources of disappointment connected with the employment of vaccination, as a prophylactic measure, is, the oversight sometimes committed of the presence of some other cutaneous or febrile affection at the time of its insertion. The pre-occupation of the skin by the eruption of measles, scarlet fever, chicken-pox, or indeed the existence of any indisposition, is often quite sufficient, if not to prevent the communication, at least so to modify the nature of the cow-pox, as to render it totally inert, or unworthy of dependence. Previous effective vaccination, or subjection to small-pox, also interferes with the regular course of the vesicle produced by subsequent vaccination.

It is not now attempted, as upon its first introduction, to advocate vaccination as a universal security against the invasion of small-pox; but, though this admission of its occasional failure must be made, yet the fact is no less important and interesting, that small-pox succeeding to cow-pox is most materially modified in its characters, and, indeed, it may be said, comparatively deprived of its fatality. The incompleteness of the protection at present afforded by vaccination, cannot be made use of as a valid objection to the practice, since it is unquestionable that much of the uncertainty now attending it is owing either to carelessness in the operator or to ignorance or negligence of the pathognomonic evidences of the normal progress of the disease. This will more evidently appear if we attach its due importance to the fact, that scarcely any, and in some years not one, of the patients of the Small-pox Hospital, admitted under small-pox after vaccination, had been vaccinated by

any officer of the National Vaccine Establishment. It is an interesting observation that some of the most melancholy and inevitably fatal cases, which used formerly to fall under the care of the obstetric physician, were those in which an attack of small-pox supervened during the puerperal state. Loss of life almost uniformly ensued both to mother and child. Such cases still occur; but, through the agency of vaccination, they are encountered with a very different result. It has happened to the author to have witnessed two instances of the beneficial influence of vaccination under these circumstances, within the last two years. Both of the females had undergone vaccination, and bore the marks of the genuine vesicle. Symptoms of small-pox began to evince themselves very shortly after the delivery; a severe but transient febrile paroxysm occurred, and was succeeded by the appearance of a well-marked, though not very copious eruption of variolous pustules, which however, upon its declension, left several permanent and well-defined scars. The children of both patients were vaccinated upon the first alarm, and escaped the contagion of the disease. Both mothers recovered.

It is now unnecessary to bring into array any arguments to prove the safety, utility, and various advantages of vaccination. Conviction has kept pace with information, and the stubbornness of facts has overcome the stubbornness of prejudice. Forty years have scarcely yet elapsed since Jenner announced his discovery. Already its efficacious application is felt in every region of the earth, and a fact not very prominent in the history of the greater number of human inventions and discoveries, stands out in bold relief as one of the remarkable points in that of vaccination, viz. that the civilized and the savage equally enjoy the boon. Although, then, we are called upon neither to argue nor to persuade, while we may and ought to be zealous in our endeavours to carry into effect the philanthropic designs of those who would convey to all mankind the blessings and benefits of vaccination: although we may in private, when looking back through the records of epidemic diseases, congratulate ourselves upon an almost total exemption from the terrible visitations of what was to our ancestors a sister-scourge to the plague, one other duty still waits fulfilment. A deep obligation imposes itself upon us, and upon every author who alludes to this subject, to bear the most studiously emphatic testimony to the merits of Dr. Jenner; and whether as an individual, or as a member of society, to acknowledge equally a sense of the gratitude due for our participation in so great and lasting a benefit as that, which through his sagacity, perseverance, and disinterested benevolence, has been conferred upon the world.

THE END.

# A BRIEF DESCRIPTION OF THE PLATES IN SERIES.

PLATE I.—Opposite p. 8.

Fig. 1. A view of an ordinary female pelvis, particularly described in pp. 8, 9, 10.

Fig. 2. A view of the male pelvis, especially distinguished by the narrowness of its pubic arch. pp. 8, 9, 10.

Fig. 3. A side view of a fœtal pelvis of about six months' gestation.

Fig. 4. An entire fœtal pelvis of about eight months' gestation.

Fig. 5. The left os innominatum of a fœtus at near the full period; its constituent portions exhibiting, at their respective periods of growth, the relative proportions of bone and cartilage entering into the formation of the whole.

PLATE II.—Opposite p. 14.

Fig. 1 exhibits a view of the superior aperture and costal surfaces of a well-made female pelvis. The several diameters of the aperture are represented by the lines aa, bb, cc, and dd: aa being the short or conjugate diameter, bb the transverse diameter, and cc and dd the two oblique diameters. See pp. 13, 14.

Fig. 2 exhibits a well-formed female pelvis inverted, to show the boundaries and dimensions of the outlet; the line a, drawn from the symphysis pubis to the tip of the os coccygis, being the long diameter, and bb stretching across between the tuberosities of the ischiatic bones forming the short diameter of the inferior aperture. See pp. 14, 15.

PLATE III.—Opposite p. 18.

This plate exhibits certain instruments which have been used for measuring the female pelvis, and therefore called pevimeters. The scale a, with its appendages, represents Coutouly's pelvimeter; and the knobbed callipers, b, that of M. Baudelocque. See pp. 18, 19. The line g, in the same figure, falling perpendicularly upon the centre of the short diameter of the brim, is intended to mark the direction of the axis of the superior aperture: the line f being drawn at right angles to the line which forms the point of bisection of the two principal diameters of the outlet, indicates that of the axis of the outlet; and the curved line d e, the central line of transit of the child's head during its passage through the pelvis. See Axis of the Pelvis, p. 17. The straight line mm, drawn centrally through the pelvis, as equidistantly as possible from its parietes, is intended to convey an idea of the axis of the entire pelvis, as fancied by some writers and teachers.

PLATE IV.—Opposite p. 21.

Fig. 1 shows the use of the index-finger employed as a pelvimeter.

Fig. 2. A scale of inches to measure the length of the finger and the part of its metacarpal prolongation employed in taking the distance between the arch of the pubis and the promontory of the sacrum. See p. 21.

PLATE V.—Opposite p. 28,

Presents two principal and characteristic varieties of distorted pelves: viz., those occasioned by the rickets of infancy, as given in the first figure; and those produced by mollities ossium of adult age, as exhibited in the second. See pp. 28—33.

## PLATE VI.—Opposite p. 33.

Admeasurements of nine different distorted pelves, designed to illustrate the characteristic varieties of the principal distortions, as just noted; and accordingly distributed under the two heads of deformities from rickets and from mollities ossium. The first figure gives distortions from rickets, and the second those produced by the disease of the adult. In both cases the distortions of the superior aperture are represented.

## PLATE VII.—Opposite p. 37.

Fig. 1 represents a fungöid growth which took its origin from the superior angle of the sulcus between the labia majora, and which covered and concealed the whole of the vulva and mons veneris. Two smaller growths of the same kind seen as it were to sprout from near the folds of each groin. Compare the view here presented with the description of the case as given in pp. 37 and 38.

Fig. 2 exhibits a vertical section of the recent female pelvis, supposed to correspond with the median line both of its parietes and contents. A, is the surface of articulation at the symphysis of the left os pubis; B, the remaining half of the bladder laid open; the other being supposed to have been removed by a vertical section of the parts; C, the contraction of the bladder at its neck, to form and to communicate with the urethra; D, the parietes of the bisected uterus; E, the vagina; F, the rectum; G, the left nympha, not very well shown; H, part of the abdominal cavity; I, a section of the termination of the clitoris at the anterior commissure of the vulva.

## PLATE VIII.—Opposite p. 111.

Fig. 1 represents a drawing of a fœtal uterus taken from a preparation in the Museum of Anatomy of the University. Its very expanded orifice shows that the cervix uteri is not at that time contracted so as to form so narrow a passage as it is known to contain during infancy and adolescence.

Fig. 2. A median section of a virgin uterus, showing the connexion of its neck and orifice with the vagina.

Fig. 3. A transverse section of the uterus, showing the natural thickness of its parietes in the virgin state. Its cavity is laid open, a, marks the beautiful provision of nature for the development of the cervix at the full period of gestation, denominated the arbor vitæ uteri. See bottom of p. 207 of the letter press. c, indicates the closeness of texture and the thickness of the parenchymatous tissue forming the uterine parietes. d, exhibits the internal surface of the vagina laid open. The fallopian tubes are cut off on either side, about half an inch from their connexion with the fundus. In the centre of each section a dot is seen to represent the narrowness of the passage through each tube. See p. 220.

Fig. 4 gives a view of the interior of the virgin uterus, and of a small portion of its corresponding vagina, after the removal of the anterior half of each by a vertical transverse section.

Figs. 5 and 6 give views of two clitorides; the former that of a clitoris laid open and without its natural covering, and the latter invested on both sides by its prepuce. See p. 59 of letter press.

Fig. 7, a view of the surfaces of a virgin vulva, exhibiting the relative positions to each other of the clitoris, with its appendages, the labia minora, orifice of the urethra, and orifice of the vagina or unruptured hymen, in a virgin subject.

Fig. 8 is a representation of a small section of the vaginal portion of the uterus, showing the remarkable smallness of its orifice in the virgin state.

Fig. 9 represents an instrument, made of ivory, employed by the author to destroy, by pressure, a fungöid growth occupying the interior of the neck of the bladder in a lady, as described in pages 89 and 90 of letter press.

## PLATE IX.—Opposite p. 204.

Fig. 1 exhibits the whole of an unimpregnated uterus in an adult subject, with a small portion of its corresponding vagina laid open. Within the section made into the vagina are to be seen, with great distinctness, the mode of engagement of the vaginal portion of the uterus, or os tincæ, as it is frequently called, within the vagina: a, is intended to mark the right fallopian tube and its connexion with the uterus; b, the short ligamentous tissue which connects the ovary of the same side with the uterus; c, indicates a part of the round ligament, and d points to the external surface anteriorly of the body of the uterus.

Fig. 2 gives a full view of all the anterior surfaces of the unimpregnated uterus and its lateral appendages.

a, shows the situation and general appearance externally of healthy ovaries. The prominences to be seen on the surfaces of both ovaries are found when cut into to contain a transparent lymph-like fluid: b, the right fallopian tube; c, the right round ligament; d, the vaginal part of the uterus with the orifice in its centre; e, the fringed termination of the right fallopian tube laid open; f, the ovarian pinion, as it is sometimes called, of the right broad ligament, which serves to connect the ovary with the uterus; g, the rugæ of the internal surface of the vagina, seen also equally distinctly in the corresponding portion of Fig. 1; h, the superior part of the neck of the uterus; i, the body of the uterus; k, the right lateral portion of the fundus of the uterus.

Fig. 3 presents a drawing of a section of the body and fundus of an unimpregnated uterus, with the left lateral appendages attached. a, exhibits a part of the uterine cavity; and b, two bristles showing the course and magnitude of the passage called the fallopian tube.

PLATE X.—Opposite p. 155.

The first figure is intended to give an advanced degree of prolapsed vagina. The aperture at its most depending part is formed by the puckering and gathering together of a superior portion of its mucous tunic. The external surface of the entire tumour in its represented malposition given in Fig. 1, is therefore the mucous membrane of the vagina inverted.

Fig. 2 represents a true prolapsion of the uterus, amounting to a slight degree of procidentia. The inferior or uterine part of the tumour is of a smoother and more polished surface, and gives the idea of a firm and dense structure within.

PLATE X. B.—Opposite p. 523.

Figs. 1 and 2. Cases of procidentia of the uterus with considerable inversions of the vagina.

Fig. 3 was that of an old lady upwards of seventy years of age, who had been the subject of procidentia uteri for many years.

PLATE X. C.—Opposite p. 550, erroneously given at that page as plate XI. B.

Fig. 1 of this plate is a drawing of Lisfranc's bivalved or two-sided speculum; a, is intended to indicate the mechanism of the rack wheel, by which those valves are separated from or made to approach each other; b, is a round piece of sponge or cork, placed between the points of the two blades of the instrument, so as to be firmly embraced by them when closed. The uses of this appendage to the speculum are to enable the practitioner to introduce it more easily, and to guard the vagina from being fretted by the edged points and sides of the instrument. c, a small silk cord by which the piece of cork or sponge is to be withdrawn, after the speculum shall have been fully introduced.

Fig. 2 is a representation of Lisfranc's speculum, with the addition of a third side, suggested, the author believes, by Messrs. Liston and Moore of London. The intention of this third blade is to prevent a large tract of the vagina from insinuating itself between the edges of the other two blades so as partially to intercept the view of the orifice of the uterus. An inspection of the entire instrument will sufficiently explain the uses of its several parts.

Fig. 3, see middle of p. 550 of letter press, is intended to represent a tube made of ivory or of box wood, with a bore through it, gradually tapering from about two inches at its base, or broader end, at a, to its smaller extremity, of which the diameter should measure about $\frac{7}{8}$ of an inch, or somewhat less or more as the case might require or admit of.

Fig. 4. A round piece of sponge to be introduced into tube, fig. 3; and b, a loop of narrow tape or riband affixed to the sponge, for the purpose of withdrawing it when necessary from the vagina. This sponge, after being charged when thought necessary with any astringent fluid, is to be put into the broader end of the tube, and to be pushed forward to its smaller extremity by the staff, fig. 5, until it shall there make its appearance as marked w in the drawing.

N. B. The forceps mentioned in p. 551 of the letter press has by an oversight not been given in this plate, where it is said to have been represented.

Fig. 6 is the first and principal view of Dr. Simpson's pessary, noticed in p. 555 of the present work, where a correct reference is given to further views of the instrument, as well as to the original essay of Dr. Simpson on the subject, and description of it.

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# DESCRIPTION OF PLATES.

## PLATE XI.—Opposite p. 554.

Fig. 1 represents a common ring pessary made with soft materials, covered with leather having its external surface well varnished.

Fig. 2 is an accurate specimen of the wooden globe pessary. The pessary represented in Fig. 3 is a spheröid, having for its material a quantity of prepared horse-hair covered with strong leather, sewed together so neatly as not to exhibit any appearance of a seam, and afterwards coated with strong varnish.

For Fig. 4 read the description at the foot of p. 554.

Fig. 5. The representation of part of the spindle of a spinning wheel, used in the country for spinning yarn, illustrative of a case reported in this work by Dr. Lucas of Brecknock, p. 451 of the letter press.

## PLATE XI. B.—Opposite p. 558.

Fig. 1 represents a slightly curved elastic spatula made of steel and covered with thin leather. One end is perforated with three small apertures. These are intended to admit of a needle and thread to be passed through them, by means of which it is proposed to connect the end of the spatula with the most depending portion of the umbilical cord, when found to prolapse before the head. Thus connected, the prolapsing portion of the cord is directed to be carried up beyond the head, and retained above it until the head shall have effected its transit through the pelvis. See a more particular description of this very simple and inexpensive instrument in p. 1022.

Fig. 2 was intended to have given a second view of the same implement; but the drawing is so imperfect as to fail of its purpose.

Fig. 3 is a good representation of a speculum matricis. It is the instrument most frequently used at present in London practice. The part to be introduced, embraces a staff finished at one end by a rounded termination, by which it is easily conducted along into contact with the os tincæ. By screwing the handle of the instrument, the staff is set at liberty, and easily withdrawn, and the part introduced into the vagina greatly expanded, so as to leave a widish tube, through which the eye can be made use of, to examine the os internum and the mucous membrane of the passage with great advantage.

Fig. 4 is a form of pessary to be used for the relief of cases of anteversion of the uterus. The perpendicular part is intended to be carried up into the superior part of the vagina, behind the vaginal part of the uterus which it is proposed the pessary should receive within its ring. It is presumed that the perpendicular back part of the instrument would have the effect of counteracting the tendency of the fundus uteri to fall forwards into the malposition of anteversion.

Fig. 5 is a good model for the construction of the cup-and-ball pessary. This instrument is to be exclusively used when the pelvis may be said to be without the natural flooring of perineum to sustain a common pessary. The bulk of the pessary is to be passed up into the vagina sufficiently high within the pelvis to receive the vaginal part of the uterus within its ring. The small open ring at the lower end of the staff of the instrument will then be found situated at the os externum in front of the vulva; where it can be accurately fixed in its situation by means of a double tape, one to connect it in front, and the other behind, to a girdle worn by the patient round the waist. By a simple contrivance of this kind, managed with a little dexterity, the worst forms of prolapsions of the uterus may be most importantly relieved.

Figs. 6 and 7 are two views of a very simple pessary made of Indian-rubber, on the suggestion of Dr. Rognetta. See a pamphlet entitled, Considerations sur le Cystocele Vaginal. Paris, 1833. See the Lancet for Dec. 21, 1833.

## PLATE XI. C.—Opposite p. 756.

Fig. 1 exhibits the model of a speculum matricis, which has been often very conveniently used by the author, to examine both the orifice of the uterus, and portions of the internal surface of the vagina. The reader however should consider the handle as wrongly represented in the drawing. It should appear attached to the tube as the handle of the speculum represented in Fig. 2.

Fig. 2 is a representation of Dr. Recamier's speculum.

Figs. 4 and 5. Detached portions of the same instrument are intended to give a correct idea, when connected and well adjusted to each other, of Ricord's speculum. Ricord's speculum is an example of what some French writers have called a bivalve speculum.

Fig. 4 is a modification of Ricord's instrument. Instead however of being two-sided like his, it has four sides, but it is constructed with that difference essentially on the same principle. The author has not been able to ascertain the name of the introducer of this modification of Ricord's speculum ; he believes it to be a recent one.

PLATE XII.—Opposite p. 214.

The distribution of the veins of the lateral appendages of the uterus is so correctly as well as beautifully exhibited in this plate, as not to admit of further elucidation by much additional description.

Fig. 1 is the neck and body of the womb laid open.

Fig. 2 is the left ovary divided by an incision made through its substance so as to show its ova. A, shows the place of section at which the ovary and fallopian tube of the left side were removed. B, shows the distribution of the right spermatic vein. D, E, are distributions of branches of the uterine or internal iliac veins.

Fig. 3 is the right ovary removed by excision, but unopened, and presenting rounded prominences on its surface.

PLATE XIII.—Opposite p. 218.

The figures in this plate give representations at m, m, and n, n, of each figure respectively, of the anterior and posterior ligaments of the uterus.

PLATE XIII. No. 2.—Opposite p. 519.

Figs. 1 and 2 exhibit copies of two engravings, by which Littre's communication to the French academy on the subject of a double uterus which he had found on dissection, in the body of an infant two months old was illustrated. The third or principal figure is a copy with permission of an engraving of Dr. Robert Lee's case of a double uterus, published in the 17th vol. p. 474 of the Transactions of the Royal Medical and Chirurgical Society.

PLATE XIII. B.—Opposite p. 520,

Is a second view of Dr. Robert Lee's preparation as exhibited in the same volume of the Medico-Chirurgical Transactions.

PLATE XIV.—Opposite p. 656.

Figs. 1 and 2 are views of different parts of the same uterus. The former shows the commencement of the fibrous tumour in the substance of the posterior walling of the womb; and the other exhibits the satin wood character of the section of tumours of this description.

PLATE XV. immediately to follow Plate XIV., and therefore to be placed opposite to page 656; and Plate XVI. immediately to follow Plate XV., and also to be placed opposite to page 656.

These several Plates exhibit, in different forms and relations to the uterus, non-pediculated tumours of the fibrous kind. In Plate XV. Fig. 2, the tumours, although of similar character to the one exhibited in Fig. 1, is not imbedded within the parenchymatous structure of the organ itself, but contained within its cavity, and attached rather loosely by cellular membrane to its interior surface. In Plate XVI. are given two views of the same preparation. In Fig. 1, we have very strikingly the character in several distinct tumours of the tuberose or fibrous tumour when not pediculated, and within the surface of the body of the womb a specimen doubtless of a tumour of the same character as to its tissue, distinctly pediculated. In No. 2, we have exhibited a fibrous tumour hanging pendulously into the cavity of the abdomen, from the fundus of the uterus, to which it is attached by a thick neck or pedicle.

PLATE XVII.—Opposite p. 658,

Is a specimen of a large sarcomatous tumour, within the very substance of the parenchymatous tissue of the womb. The small letters a, a, are intended to represent the parietes of the uterus, and b, b, c, c, different parts of the tumour cut into perpendicularly to a great depth, so as to expose its volume, and in a great measure its texture. Its tissue may be said to have been truly of a sarcomatous character, but not properly fibrous nor membranous. Its section on the other hand presented an uniform smoothness as well

as great firmness upon the application of great pressure. It was at every part free from inflammatory or ulcerative disease. The surfaces marked d, d, d, d, of either side of the preparation, are intended to represent two horizontal incisions made through the parietes of the uterus inferiorly to the tumour, with a view to lay open the mucous surface of the body of the womb, and at the same time a superior part of its cervix; g is a specimen of a pediculated tumour of an inconsiderable size, taking its origin from the interior, and about the middle of the neck of the uterus. The h, h, are superior portions of the vagina laid open; o indicates a part of the great section through the whole of the anterior parietes of the uterus, in order to lay open the tumour; i, i, are portions of the round ligament of either side.

PLATE XVIII.—Opposite p. 659,

Represents a prodigious sarcomatous tumour, containing near its centre at d masses of carcinomatous tissue. From the depth of another central and somewhat subordinate tumour within the shadow on the left of d, there was a constant stillicidium of a sanious brownish fluid, similar to that from a cancerous ulcer, and not easily, if possibly, distinguishable from it. Mr. Abernethy, to whom the preparation was shown, pronounced positively that the disease was a specimen of true carcinoma.

PLATE XIX.—Opposite p. 599,

Exhibits a variety of pediculated tumours, taking their origin from different parts, and more especially from the fundus of the uterus; a shows the body of the tumour; b, the space surrounding it within the cavity of the uterus, upon its parietes being laid open; c, the boundary line between the uterus and the vagina; d the rugæ of a small portion of the vagina laid open. Fig. 2 shows the os tincæ somewhat developed, presenting within the vagina; b, a tumour presenting within its developed orifice ready to make its way into it; c, a portion of the anterior lip of the uterus, variegated at different parts of its boundary by glandular prominences. Fig. 3 shows a polypoid tumour of largish size, pediculated by a thickish neck, i marks the knot, b indicates the thick pedicle, c the body of the tumour. Fig. 4. A pediculated tumour of about the size of a large orange, suspended by its pedicle through the neck from the interior of the uterus; a shows a section of the vaginia; b, a portion of the neck of the uterus in a developed and relaxed state; c, the pedicle of the tumour; and d, the body of it.

PLATE XIX. B.—Opposite p. 664.

Fig. 1 is a representation of a bony deposit in the substance of the parenchyma of the uterus, being a preparation in the Museum of the University of London. Figs. 2 and 3 are copies of Figs. 4 and 1 of Plate XIII. vol. 3 of the Memoirs of the Royal Academy of Surgery, Paris, in illustration of Levret's Memoire sur les Polypes de la Matrice, opposite page 598 vol. 3 of the said Memoirs. Figs. 4 and 5 are copies of Figs. 1 and 2 of Tab. XXVI. in Haller's Disputat. Morborum, and given in illustration of Hankoph's Dissertatio de Mola. Halleri Disput. Morb. vol. 4, p. 730.

PLATE XX.—Opposite p. 633.

Fig. 1 is the double canula of Levret for effecting the strangulation of pediculated tumours; his previous instrument having been the single canula represented in Fig. 2. In Fig. 3 we have the double canula of Levret, with an appendage attached to its inferior extremity of a windlass, for gradually tightening the noose of the ligature. Figs. 4 and 5 are detached portions of Desault's contrivance for conveying ligatures over the necks of pediculated tumours.

PLATE XX. B.—Opposite p. 634,

Consists of views of an instrument, the principle of which was first suggested by Desault, but which has since been so far modified and improved, that it now deserves preference to any other contrivance that has hitherto been suggested for strangulating pediculated tumours. Figs. 1 and 3 are intended to represent a common canula, through which a strong silk cord is passed and carried through the ring of the strong steel staff represented by Fig. 2. A loop of strong silk thread is passed over the canula, and carried along it until it shall include a portion of the silk cord which, in Fig. 4, it is seen to convey over the neck of the tumour, and to be subsequently conducted into and through the ring of the iron staff in such a manner as to be better understood by the reader on his inspection of

## DESCRIPTION OF PLATES.

### PLATE XX. C. Figs. 1 and 2.—Opposite p. 635.

Inspection of the several plates is necessary to enable the reader perfectly to understand the mechanism of these contrivances.

### PLATE XX. D.—Opposite p. 636.

This plate represents the most recently invented, or rather greatly improved instrument, by Richter and Gooch, for strangulating pediculated tumours. It seems well calculated to answer its intended purpose, when the neck of the tumour is of moderate thickness. For tumours of considerable size and great closeness of tissue, it appears to the author quite certain that so bulky an instrument, and one in its principle so essentially straight, could not be easily introduced by the operator, nor subsequently tolerated by the patient. For such cases, however, as it would seem best to suit, it has the merit of being a simple and beautiful piece of mechanism.

### PLATE XXI.—Opposite p. 618,

Exhibits a case of an excrescent tumour of the uterus, which, by the force of its own development, eventually produced inversion of the parietes of the womb itself. a indicates the bladder; b, a portion of the peritoneal covering of the bladder; c, one of the corpora fimbriata; d, the left ovary; e, section of the pubis; f, an upper part of the vagina; g, portions of the left lateral ligaments of the uterus; h, the uterus inverted and laid open, so as to show its interior subsequently to its inversion, but originally its external surface; i, supposed entry into one of the fallopian tubes, with one bristle introduced into it, and another passed under and supporting it; k, the neck and body of the tumour, viz. the stem of the tumour at the two higher points on the Plate where it is inserted, and the prolapsed body of it where it is seen in three several places lower down.

### PLATE XXI. B.—Opposite p. 637,

Gives a view of the unfortunate case of strangulation of part of the uterus, drawn from its natural position into a case of so much inversion as to have been brought within the action of the noose which was employed by Dr. Hunter to strangulate exclusively the pedicle of a polypoid tumour. The case is given at length in the page of the letter-press referred to, on the authority of Dr. Gooch.

### PLATE XXII.—Opposite p. 698,

Fig. 1, exhibits the uterus in a state of indolent scirrhosity, enlarged in bulk, but not ulcerated. The shaded space a, a, exhibits the interior of the body and neck of the diseased womb. Its orifice appears to have lost its usual defined limits. Fig. 2 shows the same disease at a more advanced period; the body remaining in its condition of simple scirrhosity, but its neck considerably broken down by solutions of continuity. a, shows the smooth surface of the interior of the body; b, b, represent sections of the parietes of the organ; c, c, apertures made by the disease in the neck of the uterus and in the vagina; d, a section of the vagina.

### PLATE XXII. B.—Opposite p. 701,

Exhibits a section of the uterus and the vagina in a state of advanced scirrhoma, of the fundus and body of the former, and of carcinoma of the upper part of the latter. a shows the disease in its most malignant form, as it affects a superior portion of the vagina; b exhibits the scirrhus of the parietes of the uterus in its indolent stage; c shows the interior of the body of the uterus very slightly affected by the encroaching malady; and d, the inferior tracts of the vagina, without being at all affected by it.

### PLATE XXII. C.—Opposite p. 704,

Exhibits a section of an uterus, considerably enlarged and hollowed out by carcinomatous disease. a, a, a, show the progressive character of the malignant affection, as it implicates different portions of the interior of the uterus; b, a solution of continuity committed by the encroachments of the diseased action; c, c, c, c, give the continuous section of the parietes of the organ; d exhibits the left fallopian tube in a state probably of hydropical distention.

PLATE XXII. D.—Opposite p. 708,

Represents an uterus, with its vaginal appendage, in a state of advanced cancer. The malignancy of the malady appears very greatly to have encroached, and very nearly to have demolished, the natural tissues of the parts concerned. a, a, a, a, may be said to characterize the remnants of what are seen to have been the parietes of the womb; b, b, b, are also remaining portions of the vagina; c, a large rent or solution of continuity in the posterior walling of the vagina; d, d, d, d, show the lower parts of the vagina not greatly affected by the disease.

PLATE XXII. E.—Opposite p. 723.

In this plate we observe the extreme and all possible devastations of tissue which carcinoma can commit. The drawing itself tells its story so well as to render all further explanation unnecessary.

PLATE XXIII.—Opposite p. 741.

Figs. 1 and 2 of this Plate are representations of the same disease, at different periods of its progress. The body of the uterus, marked a, in Fig. 1, and b, marking the cauliflower excrescence of its inferior extremity, suggest to the recollection of the author the precise state of the disease when he first saw the poor patient who was the subject of the malady. The whole of the uterus, from an inferior portion of its neck upwards, was free from disease, whilst the lower part of the neck and its orifice furnish the characteristic fact, first called by the late Dr. John Clarke the "Cauliflower Excrescence of the Uterus." From the date of the visit alluded to, up to the period of the patient's death, including a period of about a twelvemonth, the malady made such rapid havoc, as may be easily inferred from the representations of its two stages, as given in the respective figures. Fig. 1 gives graphically the disease as described by Dr. John Clarke; and Fig. 2, the Cerebriform Cancer or Cephaloma, and otherwise variously denominated by late authors.

PLATE XXIV.—Opposite p. 684,

Very faithfully represents a case of hydatids of the uterus, together with both ovaries enlarged and otherwise diseased.

PLATE XXV.—Opposite p. 670.

The uterus, containing the immense mola represented in this Plate, was that of a single woman, who, there was sufficient reason for believing, had never been exposed to the influence of impregnation. a represents an anterior portion of the left side of the uterus; b, a portion of the substance to which we have given the designation of Mola. The flocculent tissue immediately above that part had probably been vascular, and served the office of connecting the diseased mass with the surface of the uterus. c, a portion of the interior of the neck of the uterus, partially developed; d, a part of the anterior lip of the uterus; e, a small transverse tract of the vagina, displaying indistinctly its verge; f exhibits a part of the anterior walling of the uterus, where it had been vertically incised.

PLATE XXVII.—Opposite p. 773,

Exhibits the uterus, with its accompanying right ovary, much affected by organic disease: Fig. 1, a, is the diseased right ovary; b, represents the coronæ of teeth imbedded in its substance; c, d, are parts of the general irregular cavity which had given lodgment to ossicula, 2, 3, 4, 5, 6; e is the uterus; f is a portion of its cervix laid open; g is a hard tough fleshy tumour within the substance of its body laid open.

PLATE XXVII. B.—Opposite p. 773, and immediately to follow Plate XXVII.,

Presents the reader with another exceedingly well-drawn representation, copied indeed from Dr. Baillie's Plates, of an ovary similarly affected.

Fig. 1, a, exhibits the peculiar tissue of the ovarian part of the preparation; b, the coronæ of two teeth, of which there are two others to be seen on the opposite boundary of the section.

Fig. 2 may be well understood without the aid of a particular description.

# DESCRIPTION OF PLATES.

## PLATE XXVII. C.—Opposite p. 776.

Fig. 1 presents a view of the uterus laid open, and showing within its cavity a morbid growth from its fundus, accompanied by small membranous-looking cavities, containing fluid of its accompanying ovaries

Fig. 2 is a view of the same uterus, placed in a different position.

## PLATE XXVII. D and XXVII. E facing each other, and immediately following Plate XXVII. C.

Plate XXVII. D. a, the uterus appearing externally not to be the subject of any disease; b, the ovarian ligament; c, c, c, lobular masses of ovarian structure, presenting the character of the disease designated encysted dropsy of the ovaries. Plate XXVII. E exhibits a prodigious cyst of the opposite or right ovary laid open; a, is a view of the outside of the cyst; b, a view of its interior; and c, a view of a round diseased tubercular body enclosed within its cavity.

## PLATE XXVII. F immediately to follow Plate XXVII. E and with its face towards the left.

Fig. 1, a, the uterus; b, the fallopian tubes; d, the right ovary; e, the left ovary; f, a portion of the peritoneum.

Fig. 2. Two considerable cysts of an enlarged ovary.

Fig. 3, a, a diseased ovary laid open; b, b, cysts of the same laid open; c, a section of one of the fallopian tubes; d, the fimbriated termination of the other fallopian tube.

## PLATE XXVIII.—Opposite p. 840,

Exhibits eight specimens of ova during the earliest weeks and months of gestation.

Figs. 1, 2, 3, 4, 7, 8, give very beautiful views of the fœtal membranes, several of them at the same time giving accurate representations of the fœtus at different periods of its growth.

Fig. 5 displays especially the maternal membrane, the decidua; a, representing most exquisitely the reflexion of its interior layer, which has acquired the designation of decidua reflexa. The preparation, of which Fig. 5 is a drawing, is to be seen in the Anatomical Museum of Mr. John Taunton of Hatton Garden.

Fig. 6 is an entire ovum unopened, and therefore exhibiting exclusively the maternal membrane, the decidua. All the preparations given in this plate, with the exception of Fig. 5, are specimens in the Museum of the University of London.

## PLATE XXIX.—Opposite p. 849.

The fœtus seen coiled in situ within the uterus, at about the seventh month of gestation. The different parts of this plate will be easily understood by persons moderately well acquainted with the subject. The plate itself is a copy of one of Hunter's plates on the Gravid Uterus.

## PLATE XXX.—Opposite p. 834.

This plate represents several portions of umbilical cord, together with a double placenta.

Figs. 1 and 2 are portions of the bloodvessels of the umbilical cord injected; the arteries in each figure being seen coiling round their respective vein. In Figs. 4 and 5, besides being similarly distributed, the vessels of each cord may be seen to be remarkably and somewhat intricately knotted.

Fig. 3, besides showing the umbilical cord of each ovum distinctly within its proper cavity, as formed by their common membranes, shows also very satisfactorily the membranous wall of separation between the two fœtal chambers.

## PLATE XXXI.—Immediately to follow Plate XXX.,

Exhibits a triple placenta. It scarcely requires a particular description. Its very name takes for granted that the several placental masses are in such close apposition as to form one entire body.

## PLATE XXXI. B.—Immediately to follow Plate XXXI.

This plate represents a placenta recently injected; with the membranes still attaching.

PLATE XXXI. C.—Immediately to follow Plate XXXI. B.

This plate is a representation of the internal surface of the uterus at the full period of gestation, and is especially intended to show its prodigious vascularity.

PLATE XXXII.—Opposite p. 1099,

Fig. 1, gives a specimen of the author's common forceps. The length of the instrument between the blades is given at $6\frac{1}{2}$ inches, marked by the dotted median line drawn equidistantly between the blades. The greatest breadth between the blades, taking the external limits of the instrument in that direction, marked by the dotted line C, B, C, is given at $2\frac{5}{8}$ inches. The greatest breadth between the blades, taking the internal limits marked by the dotted line e, is $2\frac{1}{2}$ inches, and the greatest breadth in the direction of the dotted line, D, is $2\frac{1}{6}$ inches.

Fig. 2 shows the convex part of the blade of the left-hand instrument.

Fig. 3 shows the construction of a joint in the handle of the left-hand instrument.

Fig. 4 is an attempt to exhibit the concavity of the blade of the left-hand instrument.

Fig. 5 is a similar attempt to exhibit the concavity of the right-hand blade.

PLATE XXXIII.—Opposite p. 1115.

It being to be understood that the short obstetric forceps recommended in this work are like Levret's forceps, curved in the direction of their blades, plate XXXIII. exhibits the mode of handling the left-hand blade, as also the position of the patient on her left side, during its application. The drawing meets the intention so completely, as to render description wholly superfluous.

PLATE XXXIV.—Opposite p. 1116.

This drawing is intended to show the handling of the right-hand blade of the common forceps during its introduction into the pelvis. It is introduced by the right hand along the right side of the patient's pelvis, and therefore is properly designated the right-hand blade. The point of the instrument is to be carried obliquely from the fourchette to the sacro-iliac junction, and then gradually to the side of the pelvis, and eventually to a perfect parallelism with the other blade already introduced. The second figure on the right of the principal one, is a view which we may occasionally observe a dexterous practitioner make use of for the introduction of the point of the right-hand blade.

PLATE XXXV.—Opposite p. 1119,

Fig. 1, shows the tract of the head which the forceps when perfectly well applied should cover. In this Figure the reader will observe that the side of the cheek and chin, the greater part of the ear and the parietal protruberance, should be included within the fenestra of the right-hand blade which presents itself nearest to view.

Fig. 2 gives the stages of the change of direction which the right-hand blade is made to take during its introduction into the pelvis. A, represents the point of the instrument when about to be introduced immediately within the fourchette. B, its limited change of direction towards the side of the pelvis, when introduced about two and a half inches. C, a third change of direction still higher up towards the side of the pelvis, when the point is about to ascend towards the neighbourhood of the sacro-iliac junction; and D, the locality of the point of the instrument, upon its arriving at its ultimate destination, into full parallelism with the other blade.

PLATE XXXV. B.—Opposite p. 1100.

Fig. 1. On account of peculiar conformations of the pelvis, it might be inconvenient to attempt the use of forceps with two blades, having the breadths of both blades of the author's common forceps. To meet the peculiar indications of this kind, the reader will find in this Plate an useful modification of the instrument. The auxiliary blade, represented as the right-hand branch, is very narrow compared with its broader counterpart.

Fig. 2 is a representation of the stilette which the author usually employs to rupture the membranes, when he has it for his object to discharge the liquor amnii.

PLATE XXXVI.—Opposite p. 1124,

Gives a representation of the use of the forceps, and of the extreme caution to be employed in using them when the head of the child is brought down to bear upon the perineum and os externum. The drawing itself makes the lesson which it is intended to convey both more intelligible and impressive than it could be made by the most graphic description.

PLATE XXXVI. B.—Opposite 1136,

Presents the author's long forceps in actual application to the fœtal head, supposed to be arrested at the brim of the pelvis in a transverse position; the occiput being determined to the right, and the forehead to the left side of the mother. It consists of two counterparts of unequal length, as well as of different and unequal powers. The longer one is covered with leather, and lined with a padding of cotton and of the softest flannel; a considerable part of its blade, as may be seen in the representation, being intended to apply firmly to the face of the child. At the distance of about one and three quarters of an inch from its extremity, the blade has a joint in it at b, admitting of a limited degree of flexion and extension. When this branch of the instrument is carried up to its proper destination, the jointed part of the blade will be found to correspond with the superior portions of the face. The movements of the portion of it anterior to the joint are made obedient to the practitioner's will. The longer blade, of which we have been already speaking, is then to be passed up along the left side of the pelvis, in the state of full extension. When distinctly felt to have passed over the great convexity of the forehead, and ascertained by examination to be so far properly introduced, the anterior part of the blade is to be bent down and applied closely to the face; which is to be effected by moving the nut *a* upwards. This little contrivance is very simple, and its mechanism is well represented in

PLATE XXXVII.—Opposite p. 1138.

Fig. 3 of this plate represents the construction and mechanism of the long blade, when seen without its covering of leather. The shorter branch, Fig. 1, is then to be passed up along the right side of the pelvis, and applied to the child's occiput, to act both as a fulcrum and an antagonist to the other.

PLATE XXXVIII.—Opposite p. 1102.

The blades of this instrument are of unequal length. The longer is intended to apply to the latero-frontal parts of the fœtal head and face, and is to be carried up in the direction of the anterior termination of one of the oblique diameters of the pelvis, while the shorter blade is to be carried up in the direction of the opposite termination of the same diameters, so as to correspond to one or the other, as the case may be, of the sacro-iliac junctions, and applied to an occipito-lateral part of the head, immediately behind the ear.

PLATE XXXIX.—Immediately before Plate XXXVI.

In this plate is given a representation of a most useful form of the forceps with blades of unequal length. In his lectures, the author is in the habit of showing this variety of the forceps as the one which he exclusively employs for abducting the head, when the presentation is complicated with prolapsion of a portion of the umbilical cord. He begs however to add, that he often uses it in cases of more than ordinary confinement or peculiarity of conformation of the pelvis, when he finds it inconvenient to introduce the right-hand blade of the common forceps.

PLATE XXXIX. B.—Opposite p. 1155, and there incorrectly represented as Plate XXXIX.

The guarded crotchet is well represented as the entire instrument in Figs. 1 and 2, and in its separate parts in Figs. 3 and 4 of this plate. In addition to the directions given for using the instrument in the corresponding letter-press of this part of the work, the story of its application is so well told in this excellent plate as to render further description quite unnecessary.

PLATE XL.—Opposite p. 1157.

The crotchet part of the instrument described in Plate XXXIX. B, was intended to transfix the fœtal head from the outside, but as it has been the practice of some operators to fix the crotchet into the skull from within its cavity, the author has furnished the method presented in this plate for meeting this occasional

preference. We have here therefore represented a guarded crotchet, consisting, as in the former case, of two counterparts; one the crotchet part, as may be seen, with three stems or prongs in Fig. 3, to be introduced into the interior of the skull, and the other to be passed up as a guard to it on the outside of the head.

PLATE XLI.—Opposite p. 1162,

Is intended to extract the body in cases of great confinement of the pelvis after the removal of the head piecemeal. This plate is intended to give the maker a clear idea of the construction of the instrument.

PLATE XLI. B.—Immediately to follow Plate XLI., and consequently to face p. 1162.

The use of this instrument is so faithfully represented in the plate, that the reader will instantly comprehend both its object and mode of application.

PLATE XLII.—Opposite p. 1172.

Figs. 1 and 2 represent a little contrivance, of the author's own suggestion, for the decapitation of the fœtal head, in cases of impossibility or extreme difficulty of effecting the delivery by turning.

Fig. 3 represents a contrivance for effecting the same object, suggested, or at least greatly modified and and improved, by the author's valued friend and colleague, Dr. Ramsbotham.

PLATE XLIII.—Opposite p. 1164,

Gives a representation of an instrument to which the author has given the designation of Osteotomist, which in point of fact is a pair of bone-cutting pliers. It is an example of a new application of mechanical power, combining the principles of a punch and pair of scissors. The whole of the instrument is made of solid and well-tempered steel.

PLATE XLIII. B.—Opposite p. 1166.

This plate represents simply a different form of instrument, and one better adapted to cases for the relief of which it is found most convenient to effect the abstraction of long portions of the fœtal skull and scalp. The different Figures, 1, 2, 3, 4, 5, together with A and B, are given to assist the artist in the construction of the instrument.

PLATE XLIV.—Opposite p. 1054.

This Plate exhibits in different portions an apparatus which, when connected, might be truly denominated an uterine tourniquette. The belt, Fig. 1, which forms the upper part of it, is intended to surround the waist, and to be bound firmly round the body, with the assistance of its appendage system of straps, as shown in Fig. 2. As the belt would surround the patient's person too high up to produce an adequate bearing upon the locality of the uterus, the pad 5 is intended there to be placed and connected with the belt, Fig. 1, by means of the straps and buckles which are shown on its convex surface. As connected with the entire person of the patient, the same pad there marked Fig. 3, is seen applied to the hypogastrium with straps affixed to it, which are carried between the thighs and over another pad previously made to cover the external orifice of the vagina, and thence conducted to be affixed by buckles and straps to the portion of the belt which passes over the spine, and which, for the comfort of the patient's feelings, is there when necessary protected with another thin padding. The principal pad, Fig. 5, being made of firm and closely-packed materials, and firmly applied to the hypogastrium, and admitting of being unlimitedly tightened, it is obvious must produce such a pressure as would most absolutely operate under any circumstances as a preventive of further loss of blood from the uterus.

The author begs to recommend the most important of the above instruments to be ordered of Mr. Botschan, of No. 35, Worship-street, Finsbury-square, whose materials and workmanship may be always depended upon; or of any of the larger houses in the trade who are known to supply themselves with obstetric instruments of his construction.

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ERRATA.

Page 207, line 21, last word but one in the line, *for* "neck" *read* "body."
Page 209, line 23 from the top, *for* "hypogastric" *read* "spermatic."
Page 574, line 25 from the top, *for* "he felt" *read* "she felt."